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PROFESSOR OF THE HISTORY OF THE CHURCH

IN THE UNIVERSITY OF PENNSYLVANIA

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M I N E S.

R E P O R T S

OF

THE INSPECTORS OF MINES,

TO

HER MAJESTY'S SECRETARY OF STATE,

For the Year 1869.

MR. ATKINSON.

MR. DICKINSON.

MR. HIGSON.

MR. EVANS.

MR. WYNNE.

MR. BROUGH.

MR. BAKER.

MR. WALES.

MR. MOORE.

MR. ALEXANDER.

MR. SOUTHERN.

MR. WARDELL.

Presented to both Houses of Parliament by Command of Her Majesty.



LONDON:

PRINTED BY GEORGE EDWARD EYRE AND WILLIAM SPOTTISWOODE,

PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY.

FOR HER MAJESTY'S STATIONERY OFFICE.

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A RETURN,

SHOWING

The NUMBER of MALE COAL MINERS EMPLOYED in and about the COAL MINES of GREAT BRITAIN, the NUMBER of FATAL ACCIDENTS and LIVES LOST, the QUANTITY of COAL RAISED, and the PROPORTION of ACCIDENTS and LIVES LOST to the NUMBER of PERSONS EMPLOYED and the TONS of COAL RAISED.

Names of Districts	Number of Male Coal Miners Employed as per Census 1861.	IN THE YEAR 1869.						Number of Collieries.
		As computed by each Inspector for his own District	Number of Male Persons Employed.	Quantity of Coal Raised.	Separate Fatal Accidents.	Persons Employed per Separate Fatal Accident.	Persons Employed per Separate Fatal Accident.	
Northumberland, Cumberland, and North Durham	22,719	32,000	11,660,000	72	80	444	400	145,750
South Durham	-	37,800	15,636,000	74	79	511	478	197,924
North and East Lancashire	-	26,190	7,020,000	74	76	364	345	92,368
West Lancashire and North Wales	-	32,449	8,018,939	101	234	821	139	79,395
Yorkshire	-	36,000	10,893,500	62	69	581	522	175,702
Derby, Nottingham, Leicester, and Warwickshire	23,434	28,500	8,100,000	70	78	407	365	115,714
North Stafford, Cheshire, and Shropshire	-	21,000	6,200,000	45	50	466	420	137,777
South Stafford and Worcestershire	-	28,500	10,408,000	96	104	296	274	108,416
Monmouth, Gloucester, Somerset, and Devonshire	21,762	26,000	6,250,000	51	68	509	382	122,549
South Wales	-	29,000	9,180,000	115	181	252	160	79,826
Scattered over other Counties	-	148	-	-	-	-	-	-
Totals,—England and Wales	-	246,687	297,439	98,366,439	760	1,019	-	-
East Scotland	-	28,000	8,500,000	55	58	509	483	154,545
West Scotland	-	20,007	6,137,043	39	39	618	613	157,360
Totals,—Scotland	-	48,007	14,637,043	94	97	-	-	167,360
Totals and Averages,—England, Wales, and Scotland	-	282,473	345,446	108,003,482	854	1,116	405	3,206

SUMMARIES.

SUMMARY of Separate FATAL ACCIDENTS in and about the COAL MINES of GREAT BRITAIN during the Year 1869.

Names of Districts.	Falls in Mine.	Falls of Coal.	Falls of Roof.	Total Falls in Mine.	Overturning.	Ropes and Chains breaking.	Whirls ascending or descending.	Falling into Shaft from Surface.	Thirls falling from Shaft part way down.	Falling from Shaft part way down.	Thirls falling from Surface.	Falling into Shaft from Surface.	Falling from Shaft part way down.	Thirls falling from Shaft part way down.	Falling in Shafts.	Explosions of Gun-powder.	Subsidence by Gases.	Intrusions of Water.	Falling into Water.	On Inclined Planes.	By Trams and Tubs.	By Machinery Under-ground.	Sundries Under-ground.	Total of Miscellaneous Underground.	By Machinery on Surface.	Total on Surface.	Gross Total.					
Northumberland, Cumberland, and North Durham	2	5	21	26	-	1	6	4	-	-	14	1	1	1	-	1	13	-	2	18	1	3	8	12	72	74	74	74				
South Durham	1	-	30	30	1	-	1	3	1	-	6	3	1	1	-	1	12	-	1	24	-	4	-	3	7	13	13	13				
North and East Lancashire	3	11	28	39	1	-	5	3	-	-	11	4	1	1	-	3	1	1	14	4	-	1	-	8	9	9	9	101				
West Lancashire and North Wales	8	15	28	43	-	-	3	8	-	2	2	5	20	4	1	-	4	9	-	3	21	1	-	-	5	5	5	5	62			
Yorkshire	-	-	-	-	-	-	-	-	-	1	2	1	6	-	-	3	5	1	1	12	-	-	-	-	-	-	-	-				
Derbyshire, Nottinghamshire, Leicestershire, and Warwickshire	5	14	17	31	-	-	1	2	2	3	1	2	11	1	-	1	1	-	6	7	-	4	19	1	1	1	1	70	70			
North Staffordshire, Cheshire, and Shropshire	3	10	15	25	-	-	2	-	2	1	2	7	2	1	-	2	1	-	1	1	-	-	-	-	-	-	-	-	45	45		
South Staffordshire and Worcester	5	54	9	63	1	-	3	5	-	-	2	2	7	20	-	4	-	-	-	-	-	-	1	1	1	1	1	1	1	96	96	
Monmouthshire, Gloucestershire, Somersetshire, and Devonshire	6	11	26	37	-	-	1	2	1	-	-	-	1	-	-	1	-	-	2	1	1	5	1	1	1	1	1	1	51	51		
South Wales	9	11	51	62	-	3	1	2	1	1	-	6	14	1	-	1	1	-	8	10	1	1	21	-	2	2	2	115	115			
Eastern District of Scotland	1	7	22	29	-	-	1	3	-	2	1	2	8	-	1	-	1	-	4	-	-	1	10	6	-	-	1	1	7	55	55	
Western do.	4	10	18	28	-	-	2	-	1	2	-	1	2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	39	39
Total Separate Fatal Accidents	48	165	286	451	2	4	23	32	6	22	8	26	129	17	10	1	-	42	60	8	21	159	15	9	49	73	73	854	854			
in 1869					44	135	297	432	4	7	34	24	1	26	11	15	122	24	11	-	2	40	88	9	14	13	6	55	55	74	860	
in 1868																																
Decrease, 1869 -																																
																																6

SUMMARIES.

SUMMARY of DEATHS caused by the aforesaid ACCIDENTS in and about the COAL MINES of GREAT BRITAIN during the Year 1869.

Names of Districts.	Falls in Mine.	In Shafts.	Miscellaneous Underground.	On Surface.		Gross Total.
				Total Falls in Mine.	Total in Shafts.	
Northumberland, Cumberland, and North Durham	6	5	28	-	1	14
South Durham	2	-	31	-	6	18
North and East Lancashire	3	11	28	39	1	13
West Lancashire and North Wales	-	128	15	30	45	12
Yorkshire	-	1	18	23	41	7
Derbyshire, Nottinghamshire, Leicestershire, and Warwickshire	6	14	17	31	-	1
North Staffordshire, Cheshire, and Shropshire	7	10	15	25	-	2
South Staffordshire and Worcester	6	59	9	68	1	5
Monmouthshire, Gloucestershire, Somersetshire, and Devonshire	23	11	26	37	-	1
South Wales	-	70	11	52	68	4
Eastern District of Scotland	-	1	8	22	30	1
Western do.	-	4	10	18	28	2
Total Lives Lost { in 1869	-	257	172	294	6	29
in 1868	-	154	138	307	15	129
					28	23
					11	15
					28	21
					9	192
					15	132
					14	179
					7	179
					204	8
						28
						88
						9
						15
						28
						17
						19
						49
						85
						77
						56
						14
						106
						1011
						1116

A

SUMMARY of Separate FATAL ACCIDENTS in and about the INSPECTED IRONSTONE MINES of GREAT BRITAIN during the Year 1869.

Names of Districts.	Falls in Mine.	Explosions of Fire Damps.	Falls of Ironstone.	Falls of Root.	Total Falls in Mine.	Overwinding.	Ropes and Chains breaking.	Whilst ascending or descending.	Fallings from Surface.	Fallings from part way down.	Things falling from part way down.	Miscellaneous in Shafts.	Total in Shafts.	Explosions of Gun-powder.	Suffocation by Gases.	Injuries of Water.	Falling into Water.	On Iron-filled Pipes.	By Trams and Tubs.	By Machinery Under-ground.	Sundries Under-ground.	Total [Miscellaneous Under-ground.	By Machinery on Surface.	Boilerm burstings.	Miscellaneous on Surface.	Total on Surface.	Gross Totals.		
Northumberland, Cumberland, and North Durham	-	-	-	-	3	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
South Durham	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12
North and East Lancashire	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14
West Lancashire and North Wales	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Yorkshire	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Derbyshire, Nottinghamshire, Leicestershire, and Warwickshire	-	-	-	-	1	7	8	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	
North Staffordshire, Cheshire, and Shropshire	-	-	-	-	5	1	6	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	
South Staffordshire and Worcestershire	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Monmouthshire, Gloucestershire, Somersetshire, and Devonshire	-	-	-	-	-	4	4	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	
South Wales	-	-	-	-	-	-	3	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	
Eastern District of Scotland	-	-	-	-	-	1	1	2	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	
Western do.	-	-	-	-	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	
Total Separate Fatal Accidents	-	6	23	29	-	3	5	6	5	2	1	-	1	12	1	-	-	5	-	4	10	2	-	1	3	54	14		
in 1869	2	12	27	39	1	-	5	3	3	1	-	1	14	1	-	-	-	2	3	-	10	2	-	1	3	68	14		
in 1868	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Decrease, 1869 -																													

SUMMARIES.

7

SUMMARY of DEATHS caused by the aforesaid ACCIDENTS in and about the INSPECTED IRONSTONE MINES of GREAT BRITAIN during the Year 1869.

Names of Districts.	Falls in Mine.	In Shafts.	Miscellaneous Underground.	On Surface.		Gross Totals.
				Total on Surface.	Miscellaneous on Surface.	
Northumberland, Cumberland, and North Durham	-	-	-	-	-	2
South Durham	-	-	-	-	-	1
North and East Lancashire	-	-	-	-	-	6
West Lancashire and North Wales	-	-	-	-	-	12
Yorkshire	-	-	-	-	-	14
Derbyshire, Nottinghamshire, Leicestershire, and Warwickshire	-	-	-	-	-	2
North Staffordshire, Cheshire, and Shropshire	-	-	-	-	-	2
South Staffordshire and Worcesterhire	-	-	-	-	-	3
Monmouthshire, Gloucestershire, Somersetshire, and Devonshire	-	-	-	-	-	5
South Wales	-	-	-	-	-	3
Eastern District of Scotland	-	-	-	-	-	1
Western	-	-	-	-	-	2
Total Lives Lost { in 1869	-	6	23	29	1	54
in 1868	-	2	12	39	1	69
					-	1
					-	3
					-	3
					-	15
					Decrease, 1869 -	

A 4

Mr. Atkinson's Report.

REPORT on the INSPECTION of MINES in the SOUTH DURHAM INSPECTION DISTRICT, from the 31st December 1868 to the 31st December 1869.—
By JOHN J. ATKINSON, Esq.

SIR, Chilton Moor, Fence Houses, February 28th, 1870.

I have the honour, as Inspector of Mines for the South Durham Mines Inspection District, to report to you, with reference to the operation of the Mines Inspection Acts during the year ending 31st December 1869.

The following Table shows the number of fatal accidents of different kinds, and the number of deaths that have resulted from them, in, at, and about the mines of the district, in each of the years 1865, 1866, 1867, 1868, and 1869; the last being the year embraced by this Report.

	Number of Separate Accidents.					Number of Deaths resulting.				
	Year.					Year.				
	1865.	1866.	1867.	1868.	1869.	1865.	1866.	1867.	1868.	1869.
EXPLOSIONS OF FIRE-DAMP	2	2	1	1	1	4	28	1	1	2
FALLS OF COAL AND STONE.										
Falls of coal	1	1	3	2	—	1	1	3	2	—
Falls of stone	20	22	25	33	30	21	22	26	34	31
Total falls in mine	21	23	28	35	30	22	23	29	36	31
IN SHAFTS.										
Overwinding	—	—	—	—	—	—	—	—	—	—
Ropes or chains breaking	1	—	1	—	—	1	—	1	—	—
Whilst ascending or descending	5	3	1	3	1	5	3	1	3	1
Falling into shaft from top	2	—	—	1	3	2	—	—	1	3
Things falling from top of shaft	—	2	—	—	1	—	3	—	—	1
Falling from part way down	—	—	—	3	1	—	—	—	3	1
Things falling from part way down	—	2	—	—	—	—	2	—	—	—
Sundries in shafts	2	4	—	3	—	2	4	—	3	—
Totals in shafts	10	11	2	10	6	10	12	2	10	6
MISCELLANEOUS UNDERGROUND.										
Explosions of gunpowder	2	1	—	—	3	2	1	—	—	3
Suffocation by gases	—	—	1	—	—	—	—	1	—	—
Irruptions of water	—	—	—	—	—	—	—	—	—	—
Falling into water	—	—	—	—	—	—	—	—	—	—
On incline and engine planes	9	11	11	7	6	9	15	11	7	6
By trams or tubs underground	7	19	14	15	12	7	19	14	15	12
By machinery do.	1	1	—	3	1	1	1	—	3	1
Sundries underground	3	4	1	—	2	6	4	1	—	3
Total miscellaneous underground	22	36	27	25	24	25	40	27	25	25
Total underground	55	72	58	71	61	61	103	59	72	64
ON SURFACE.										
By machinery on surface	4	1	3	1	—	4	1	3	2	—
By boilers bursting on surface	—	1	2	2	1	—	1	4	3	3
By sundries on surface	17	10	11	10	12	17	10	11	10	12
Total on surface	21	12	16	13	13	21	12	18	15	15
GROSS TOTALS	76	84	74	84	74	82	115	77	87	79

No fatal accident has been reported as having occurred during the course of the past year, 1869, in connexion with the very few ironstone mines that come under the operation of the Mines Inspection Acts in this district.

The preceding table shows that only one explosion of fire-damp has proved fatal in this district during the past year, and that it caused the deaths of only two persons.

However much the loss of a single life is to be deplored either from this or from any other cause, I cannot refrain, with propriety, from congratulating the colliery managers, and also the workmen employed in the district, upon such a result, as it evinces great care, precaution, and a rigid enforcement of rules and regulations on the part of the managers, and, at the same time, indicates that the workmen are subject and obedient to the rules laid down for their guidance and for the general safety of themselves and that of their fellow workmen to a degree that does not prevail in some other parts of the kingdom.

It is satisfactory to have, from year to year, to repeat this congratulation to the managers and workpeople in the mines of the district.

The relative satisfaction which I feel called upon to express on this very serious matter will, I trust, rather have the effect of producing such an amount of emulation amongst the different districts of the kingdom as may lead to the comparative rareness of loss of life from this very distressing source, than to any relaxation of care and precaution against it, either in this or in any other district.

To expect a perfect immunity from loss of life through this class of accidents would, I think, be Utopian, and I dare not indulge any hope of such a result.

The number of deaths that have resulted from falls of material in the mines of the district during the past year, although rather more numerous than they were on the average of the preceding four years embraced by the table, have been five less in number than they were in the preceding year 1868.

During the past year, 1869, 30 accidents of this class have caused the deaths of 31 persons in the district, $27\frac{1}{2}$ per year being the average number of deaths that resulted from the same class of accidents during the preceding four years that are embraced by the table.

During the year 1869, six lives have been lost in the district from six separate shaft accidents; in the preceding year, 1868, 10 lives were lost through this class of accidents by an equal number of separate accidents; whereas during the preceding year 1867, only two of such accidents occurred, each causing the death of one person only; and in my annual Report in reference to the year 1867 (dated 28th February 1868), I expressed a hope that we had entered upon a new era as to deaths from shaft accidents, and that some permanent reduction in their frequency might be expected.

The past year's results tend to verify this anticipation, at least in reference to this district, from which the loss of only four lives are to be reported, as compared with an average of $8\frac{1}{2}$ per year during the preceding four years, as shown by the table.

Further precautions against this particular class of accidents have been discussed and considered by the Inspectors of Mines at their recent annual meeting, and it may, I think, be reasonably anticipated, that a further and more general reduction may be made in their number, as well as in the amount of fatality with which they have hitherto been attended.

It is proposed by the Inspectors of Mines that the fifth General Rule suggested for adoption in the Report of the Inspector, dated January 1867, should have the words "*All entrances to*" prefixed to it, which will have the effect of causing protection against persons falling into or down shafts at intermediate seams, should it be found to be practicable to carry out the suggestion in its integrity.

The deaths that have resulted from underground accidents of a miscellaneous character in the mines of the district, during the past year, have been caused chiefly by crushes by coal tubs; mostly in the extreme workings of the mines, but to the extent of about one half of this number, in the principal hauling roads on inclined and engine planes; but, on the whole, they compare favourably with those that have resulted upon the average per year of each of the four preceding years embraced by the table.

Altogether, the number of deaths that have been caused by underground and shaft accidents in the coal mines of the district during the past year have amounted to 64, being a reduction of 13 per cent. in the numbers of deaths from accidents of the same class upon the average of the four preceding years embraced by the table.

The deaths that resulted from accidents on the surface at and about the mines of the district during the past year have been 15 in number, the same as during the preceding year, and only slightly fewer than the average number per year during the preceding four years embraced by the table.

On the whole, the deaths from accidents both above and underground, at and about the mines of the district, during the past year, have been 79 in number, whereas the yearly average during the preceding four years was 90½ deaths, the reduction being about in 1 in 8, or 12½ per cent.

Three of the accidents that have occurred in connexion with the mines of the district during the past year have each caused the deaths of two persons, one of these accidents being a fall of stone at Adelaide Colliery, belonging to Messrs. Joseph Pease and partners; another being a fall of timber at White Lea Colliery, belonging to Messrs. Bolckow, Vaughan, and Co., both of the victims being deputy overmen in the latter case. The third case, in which two lives were lost by one accident, was an explosion of fire-damp at South Hetton Colliery, whereby a deputy overman and a hewer lost their lives.

Three lives were lost through the explosion of a boiler on the surface in connexion with the winding engine at Sherburn House Colliery, belonging to the Earl of Durham; one of the sufferers was the brakesman, and the other two were firemen.

Each of the other 70 fatal accidents involved the loss of only one life.

A detailed list of the fatal accidents and of the deaths that have resulted from them during the past year 1869 is appended to this report, and prefixed to it are summaries in which the fatal accidents, and the deaths resulting from them, are classified, both as regards the coal mines, and separately, as regards the ironstone mines coming within the scope of the Mines Inspection Act, in each of the 12 inspection districts into which Great Britain is divided.

There is also prefixed to this report a return showing, separately, for each of the 12 inspection districts into which Great Britain is divided the number of male persons employed in, at, and about the coal mines, the quantity of coal raised, the number of fatal accidents, and the number of deaths that have resulted from such accidents; and also the number of persons employed per fatal accident, the number of persons employed per life lost, the tons of coals raised per fatal accident and per life lost through such accidents, and the number of collieries.

The following comparative statement is extracted from the last-mentioned return.

1869.	The whole of Great Britain.	The South Durham Inspection District.
Computed number of persons employed; on census basis	345,446	37,800
Computed quantity of coal raised, in tons	108,003	15,636,000
Number of fatal accidents	854	74
Number of lives lost by such accidents	1,116	79
Number of persons employed per fatal accident	405	511
Number of persons employed per life lost by fatal accident	309	478
Tons of coal raised per separate fatal accidents	126,468	211,297
Tons of coal raised per life lost by accidents	96,777	197,924
Number of collieries	3,206	163

Fatal Explosion of Fire-damp.

The only explosion of fire-damp that has occurred in the mines of the district during the past year, 1869, took place in a part of the whole-mine workings in the main coal seam at South Hetton Colliery on the 29th January, causing the deaths of a deputy-overman and a coal hewer.

Safety lamps were in use, but owing to the fact of no fire-damp having been previously observed (except on a single occasion, and then only a very trivial quantity,) in the district, and the general efficiency of the ventilation, the deputy overmen were allowed to fire shots for the hewers, but only upon the condition that after a careful examination of the place it was found to be free from fire-damp.

The barometer had fallen much and rapidly shortly before the occurrence, and the under-viewer had, in consequence, sent a special message to warn the deputy overman to take extra care.

A few yards from the face of the place some top-coal had, however, fallen, and liberated a feeder of water, accompanied, it would appear from the event, by gas or fire-damp.

Webster, the deputy overman, had also been told not to let this particular place be worked, with the view of allowing the feeder of water to exhaust itself; yet, contrary to these instructions, he had allowed the hewer, Thomas Routledge, to work in it. There had been no complaints as to any lack of ventilation in the district, but, on the contrary, some of the workmen had complained of the current of air being too strong. About

7,000 cubic feet of air per minute passed through it, although one half of that quantity was considered to be sufficient under ordinary circumstances.

The deputy overman, Christopher Webster, alleged after the accident that he had examined the place, and found no fire-damp before he fired the shot, and Routledge, the brewer, said that he himself did so, but stated that he did not observe Webster do so.

It appears to be probable that the examination was only made near the face of the place, and that the fire-damp which exploded had accumulated several yards back where the water had come off; and further, that the shot which blew out the stemming without bringing down the coal, had flown out like a rocket, and had so ignited the fire-damp.

Under ordinary circumstances the district of the mine where this explosion happened might, I have no doubt, have been safely worked with candles or other naked lights, but it is, in my opinion correctly, thought to be more safe to use safety lamps even where the hardness of the coal renders the use of blasting powder necessary, provided that only special and competent persons are allowed to fire the shots, and that the use of gunpowder is altogether prohibited in broken or pillar workings in mines known to give off fire-damp; this last limitation of the use of blasting powder might, I think, with advantage, be embodied in the general rules of the New Mines Inspection Act, as also do a majority of such of the inspectors of mines as attended a recent annual meeting of the Inspectors of Mines.

I have in previous reports mentioned a series of experiments that have been conducted by a committee of the Northern Institute of Mining Engineers, with the view of ascertaining the relative degree of safety or danger appertaining to so-called safety lamps when exposed to rapid currents of fire-damp, and as I have been desired by Messrs. Hann and Son to give expression to my views as to the relative merits of one or both of their patent lamps, and as I believe that they have also applied to you, asking for some competent persons to be appointed to inquire into and report upon the merits of one or both of their patent lamps, it may perhaps not be out of place to state that I found one of their lamps very "petted in burning," a slight motion from travelling extinguishing the light.

The engineer of a very large and fiery mine has told me since, that he obtained a dozen of these lamps in order to give them a trial, but that before venturing to use them in the mine he had them tested in a small gasometer of the class described at page six of my annual report for the year 1867, and dated February 1868, and that as the gas was exploded by one of the lamps, he did not of course deem it either safe or prudent to allow them to be used underground, but returned them. The simple test alluded to is, I think specially worthy of more extensive adoption than it has hitherto obtained, and I again commend it to the notice of those who have the management of fiery collieries.

I have reason to suppose that Messrs. Hann and Son have from time to time made alterations, which may be improvements, in their patent lamps, but as several other proposed new lamps are in the field, I have not, up to the present time, had leisure to examine into the minute details of all the suggested improvements made in the various new lamps that are being attempted to be brought out, and, but from the repeated applications of Messrs. Hann and Son, I should not have thought of their lamps as calling for special notice.

The No. 1 lamp of Messrs. Hann and Son has been well tried by both the underviewer and several of the workmen of the Eppleton pit at the Hetton Coal Company's collieries, and both it and their No. 2 lamp are favorably reported of by the latter, both as to safety and for practical use.

Messrs. Hopton of Monk Bretton, James Wilson of Darfield Main Colliery near Barnsley, together with an overman there, Messrs. John Peel of Springwell Colliery, and Peter Spooner of Throckley Colliery, near Newcastle-on-Tyne, all bear testimony in favor of the No. 1 lamp.

Mr. S. B. Coxon, Mining Engineer of Usworth and of several other collieries, as well as Mr. T. Robson, one of the Earl of Durham's mining engineers, also report in very favorable terms of the No. 1 lamp; probably with recent improvements.

Falls of Coal and Roof.

I am not aware of any particular case calling for special notice here in the above class of accidents.

The fall that killed the two brothers Pratt at Adelaide Colliery was quite unforeseen. One was about to commence working in the place that the other was leaving, and while

they were, one dressing and the other undressing, at some distance back from the face of the place, a sudden and unexpected fall of stone came upon them.

Two deputy overmen were crushed by the falling of a heavy baulk of timber at White Lea Colliery on the 26th of May, where they were in the act of removing the timber from an abandoned road.

Their lives were under their own charge, both being officers for the purpose of attending to the safety of the ordinary miners as well as to their own.

Fatal Accidents in Shafts.

All the accidents of this class that have proved fatal in the district during the past year have been of the most ordinary description, and none of them appear to call for special remark.

I have already stated that I think that there is a reasonable prospect of the number of both the accidents and the deaths under this head being reduced.

A similar remark applies to the under-ground accidents of a miscellaneous character, unless it was in the case of Adam Francis, who was thrown by an engine plane rope into the front of a set of tubs at the shaft landing at Page Bank Colliery on the 8th November, and so injured by the laden set of tubs as to cause his death.

The way was narrow at the place, being in a barrier between two royalties, but at my instigation leave has since been obtained from the lessor's viewer to make a separate travelling way, so that workmen need not come in contact with the ropes and tubs at the place.

Above-ground Accidents.

The fatal accidents which occurred above-ground during the last year have been of the ordinary character, consisting principally of crushes by coal wagons and trucks near the tops of the pits, with the exception of a boiler explosion at Sherburn House Colliery, which caused the deaths of three persons. I do not, even in this case, feel it necessary to enter into details, as there was nothing more in the case than what pointed to the old cause in the form of boilers being used until the iron is deteriorated in quality by long exposure to the hot air and gases of the boiler fires, and finally become further weakened by the process of pinning to get the rivet holes of the new plates used to repair them, until they are no longer capable of withstanding the ordinary working pressure.

I may add that I think it highly desirable that colliery boilers should not only be placed under the supervision of one or other of the several boiler inspection companies, but that the boilers should be insured, in order, so far, to ensure efficient inspection on the part of the agents and workmen of such companies. The faulty parts of steam boilers is a speciality with them, and their great experience naturally enables them to detect and report defects of a dangerous character.

Non-fatal Accidents.

Forty-three non-fatal accidents have been reported during the past year.

I have stated in previous reports how little I consider the utility of these reports. Any person injured by them has the right to sue for compensation any one responsible and blameable for the injury he may have sustained, whether owner, agent, or workman, or to lay his complaint before the inspector for the district, who would be in duty bound to bring the case under your notice, at any rate if he saw any foundation for the complaint.

Underground employment and education of boys.

I have nothing new to report upon this subject, and it is now under the consideration of Parliament, after very full inquiry.

There are 161 collieries in this mines inspection district.

I have, &c.

JOHN J. ATKINSON,
Inspector of Mines.

The Right Hon. H. A. Bruce, M. P.,
H. M. Principal Secretary of State
for the Home Department.

List of the FATAL COLLIER ACCIDENTS, and LOSS of LIFE arising therefrom, in the SOUTH DURHAM MINES INSPECTION DISTRICT, during the Year ended
31st day of December 1869.

Date.	Name of Colliery.	Where situated.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death and Remarks.	Number of Lives lost.		
								In Shafts.	Miscellaneous.	Above Ground.
1869.										Total.
Jan. 5	1	Auckland Park	Bishop Auckland	Black Boy Coal Co.	Thos. Wilkinson	Labourer	44	A trunk of a tree fell off a truck on to him.	1	1
" 11	2	{ Adelaide Ditto Houghton	Ditto Ditto Fence Houses	Josh. Pease & Partners Ditto Earl Durham	Thos. Pratt George Pratt Richard Newton	Hewer Ditto Putter	35 27 14	Fall of stone Ditto Head crushed between roof and top of tub.	1	2
" 20	3			Bishop Auckland Fence Houses	Bolckow, Vaughan, & Co. Forster & Co.	W. Hollandsworth Thos. Routledge Christopher Webster	12 28 24	Crushed between two wagons Explosion of fire-damp Ditto	1	1
" 21	4	Shildon Lodge	Ditto	Thomas Wood	Michael Holland	Hewer	29	Fall of stone	1	1
" 29	5	{ South Henton Ditto	Ferry Hill Fence Houses	Earl Durham	Wilson Bell	Joiner	40	Crushed by cage while looking down pit.	1	1
Feb. 9	6	Trimdon								
" 12	7	Newbottle								
" 13	8	Seaham	Sunderland	Earl Vane	Thos. Andrew	Hewer	21	Fall of stone	1	1
" 18	9	Tudhoe	Ferry Hill	Weardale Iron & Coal Co.	Thos. Appleby	Ditto	24	Run over by set on engine plane	1	1
" 20	10	Murton	Fence Houses	Forster & Co.	Jno. Murphy	Driver	14	Run over by tubs	1	1
" 22	11	Evenwood	Bishop Auckland	T. Charlton & Co.	Thos. Bell	Shifter	40	Fell down pit	1	1
" 23	12	Framwellgate	Durham	Earl Vane	Thos. Halliday	Driver	13	Crushed by tubs	1	1
" 26	13	Haswell	Fence Houses	Haswell Coal Co.	George Bowell	Wagonchalker	23	Run over by 15 wagons	1	1
Mar. 4	14	Oakenshaw	Willington	Strakers & Love	Jas. Elie	Putter	19	Fall of stone	1	1
" 11	15	Ryhope	Sunderland	Ryhope Coal Co.	Wm. Tilley	Ditto	48	Ditto	1	1
" 17	16	Shincliffe	Durham	Spark & Love	George Gatis	Ditto	34	Ditto	1	1
" 19	17	Whitworth	Ferry Hill	R. S. Johnson & Co.	Robert Halliday	Stoneman	65	Run over by 8 empty wagons	1	1
" 22	18	Burnhope	Lanchester	Sowerby & Fletcher	Wm. Siddons	Screenman	46	Tub fell down drop staple on to him	1	1
" 23	19	Shotton	Castle Eden	Haswell Coal Co.	Jas. Halliday	Putter	15	A shot exploded unexpectedly	1	1
" 29	20	Low Bitchburn	Darlington	John Sharp	Robert Allison	Hewer	71	Fall of band	1	1
April 6	21	Wingate Grange	Ferry Hill	Executors of late J. Gally	Charles Trouscott	Ditto	30	Fell out of ribble	1	1
" 9	22	Castle Eden	Castle Eden	William Cook	Jno. Anderson	Sinker	50	Run over by wagons	1	1
" 10	23	Shotton	Darlington	Haswell Coal Co.	Thos. Bolam	Driver	13	Fall of stone	1	1
" 29	24	Willington	Darlington	Strakers & Love	Wm. Fairbridge	Hewer	25	Ditto	1	1
" 29	25	Black Prince	Gateshead	Weardale Iron & Coal Co.	Thos. Hall	Ditto	20	Fall of band	1	1
" 30	26	South Pontop	Durham	H. Ritson & Partners	Daniel Dawson	Putter	16	Fall of stone	1	1
" 18	27	Byer's Green	Ferry Hill	Bolckow, Vaughan, & Co.	Jno. Brunsell	Hewer	97	Crushed by tubs	1	1
" 24	28	Wingate Grange	Tudhoe	Executors of late J. Gally	Samuel Almes	Driver	14	Run over by a full tub	1	1
	29			Weardale Iron & Coal Co.	Robert Brown	Ditto	13			

MR. ATKINSON'S REPORT.

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List of Fatal Colliery Accidents—continued.

Date.	No. of Accidents	Name of Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death and Remarks.	Number of Lives lost.		
									Explosions.	Falls of Coal and Roof.	Miscellaneous.
1869.	May 26	30	Seaham	Earl Vane	Chris. Wilkinson	Driver	14	Crushed by tubs	—	—	1
	"	31	White Lea	Bolckow, Vaughan, & Co.	Richard Moor	Deputy	39	Crushed by a fall of timber	—	—	2
	"	32	Ditto	Ditto	George Close	Ditto	41	ditto	—	—	1
	"	33	West Pelton	Chester-le-Street	William Walton	Driver	14	Run-over by a timber tram	—	—	1
June	3	34	Whitworth	Ferry Hill	Edward Betton	Hewer	32	Fall of stone	—	—	1
"	4	34	Woodfield	Darlington	Patrick Gilboy	Labourer	27	Fell down pit from the surface	—	—	1
"	5	35	Eshley	Ditto	Thomas Yetts	Sinker	42	Fell out of ribble	—	—	1
"	8	36	East Hetton	Ferry Hill	Jos. Laidler	Compass boy	14	A stone fell down a staple on to him	—	—	1
"	10	37	Spenny Moor	Ditto	Wm. Simpeon	Hewer	47	Fall of stone and coal	—	—	1
"	15	38	Murton	Fence Houses	George Wild	Ditto	47	Fall of stone	—	—	1
"	16	39	Sherburn House	Earl Durham	Ralph Marley	Brakesman	43	Explosion of a steam boiler	—	—	1
"	23	40	Willington	Ditto	Thos. Clayton	Fireman	21	ditto	—	—	1
"	24	41	Sherburn	Ditto	Jno. Surtees	Ditto	19	ditto	—	—	1
"	26	42	Castle Eden	Ditto	Jas. Stout	Deputy	34	Run over by set on engine plane	—	—	1
"	26	43	Hedley Hope	Ferry Hill	Spours Morrow	Hewer	18	Ditto	—	—	1
July	2	44	Brandon	Darlington	Wm. Williamson	Deputy	22	Fall of stone	—	—	1
"	3	45	Newton Cap	Darlington	Wm. Stevenson	Hewer	23	Ditto	—	—	1
"	7	46	Brancepeth	Darlington	Robt. Chisholm	Enginewright	63	Fell off Heapestead	—	—	1
"	13	47	Sacriston	Darlington	Jas. Moor	Hewer	45	Fall of stone	—	—	1
"	17	48	Old Etherley	Darlington	Matthew Burdess	Landing-boy	14	Ditto	—	—	1
"	22	49	Shildon Lodge	Bishop Auckland	Jno. Liddle	Mason	14	Head crushed while riding on engine plane.	—	—	1
"	26	50	Tudhoe	Ferry Hill	Wm. Maughan	Railway-man	55	Fall of stone	—	—	1
"	26	51	Woodhouse Close	Bishop Auckland	Wm. Robinson	Hewer	18	Ditto	—	—	1
Aug.	9	52	West Auckland	Darlington	Matthew Holland	Driver	25	Run over by wagons	—	—	1
"	18	53	Evenwood	Bishop Auckland	Joe Clifford.	Driver	18	Crushed between tub and prop	—	—	1
"	26	54	Consett	Lanchester	Jno. Teasdale	Labourer	21	Fell into boiler fire-hole while in a fit and was burned.	—	—	1
"	55	Thorley	Tow Law	T. Charlton & Co.	Jas. Powell	Hewer	20	Blasting of coal	—	—	1
"	56	Old Durham	Darlington	Consett Iron Co.	Barnard Quin	Ditto	33	Fall of band	—	—	1
"	57	Tusdale	Darlington	Original Hartlepool Colliery Co.	Jno. Eggleton	Joiner	31	His fore-finger was injured and locked set in.	—	—	1
"	58	Houghton	Darlington	Earl Vane	George Coxon	Driver	64	Crushed between horse and wagon	—	—	1
"	58		Darlington	Bell, Brothers	Pybus Christopher	Hewer	21	Burned by gunpowder (supposed)	—	—	1
"	58		Darlington	Earl Durham	Thos. Harrison	Shifter	64	Crushed by set on engine plane	—	—	1

List of Fatal Colliery Accidents—*continued.*

Mr. Dickinson's Report.

REPORT on the INSPECTION of MINES in the NORTH and EAST LANCASHIRE or MANCHESTER DISTRICT for the Year ended 31st December 1869.—By JOSEPH DICKINSON, Esq., F.G.S.

SIR,

Pendleton, Manchester, 25th February 1870.

I HAVE the honour to present my report for the year 1869, in accordance with the Act for the Regulation and Inspection of Mines.

The separate fatal accidents amount to 74, and the deaths therefrom to 76. They consist of—

3 by explosions of firedamp	-	-	-	-	causing 3 deaths
39 „ falls of roof and coal	-	-	-	-	„ 39 „
11 „ shaft accidents	-	-	-	-	„ 12 „
14 „ miscellaneous accidents below ground	-	-	-	-	„ 15 „
7 „ ditto ditto above ground	-	-	-	-	„ 7 „

The three fatal explosions of firedamp, causing three deaths, occurred ; 1st, on the 13th April, at Clifton Moss, from gas which got vent suddenly out of the strata when some roof fell ; 2nd, on the 14th September, at Hoddlesden, from gas that had been accumulated for some time ; and 3rd, on the 1st December, at Tonge, from gas accumulating in an upbrow where none had been seen before, and into which the person went with an open light at night when no one was there working.

The 39 fatal accidents from falls of roof and coal, causing 39 deaths arose in 11 instances from falls of coal, and 28 from falls of roof.

The 11 fatal shaft accidents causing 12 deaths, arose :—

One by the cage being wound over the engine house upon him where he was at work at the back :

Five whilst ascending or descending, one of the persons being jerked out of a tub by the breakage of a hook ; one by falling out of a bucket in a windlass pit ; one by the cage being started as he was getting in, the signal to go on having been given unknown to the hooker-on ; one by the cage going on as he was getting in at a mouthing, the hooker-on not being aware that his assistant at the other side had given the signal ; and two persons who were killed in one accident by the winding drum coming out of gear as they were descending, the engineer having, as it would appear, omitted to put in the stopblock.

Three by falling into the shaft from the surface ; the first arising from the fencing at the lower surface landing not being replaced after sending some heavy castings down the pit ; the second by becoming overbalanced as he was leaning over to loosen a clack in a pipe that supplied water to the boilers ; and the third by going underneath the fence rail, apparently expecting that the cage was up at that side :

And two by falling from part way down ; one being from a stay in a sinking pit, and the other from a mouthing to which he had just descended without a light.

The 14 fatal miscellaneous accidents below ground causing 15 deaths occurred :—

In 4 instances by powder, which caused 5 deaths, one of them being by a spark from a piece of fuse, which was being tried to see if it was good, flying into a powder can ; another by a shot going off as it was being stemmed with an iron rammer in coal, there being a brass or brazzel bored through in the hole ; and two, causing three deaths, by shots which had missed fire going off as they were being attempted to be drilled out :

In 1 instance from suffocation by firedamp where the roof had fallen and stopped the air-way, and into which he inadvertently entered, passing the danger signal :

In 5 instances, causing 5 deaths, on inclined planes, respectively, by a waggon coming against the person in the bottom of a brow ; by a waggon running amain down a brow, having been inadvertently hooked to a piece of loose chain used for drawing props instead of to the coupling chain as intended ; by getting crushed with a waggon that he was replacing on the rails in a brow, the windlass to which it was attached not being properly secured ; by a prop to which the pulley wheel was attached becoming dragged away ; and by getting crushed against the roof as he was riding on a tram up an engine brow.

Miscellaneous accidents below ground.

In 3 instances by machinery causing three deaths; two being to engineers who got caught whilst adjusting machinery the other instance being to a person who got struck by a windlass handle that he let go when the rope gave a jerk:

And in 1 instance, causing one death, by some puddle that he was removing falling upon him, he having incautiously gone underneath it, instead of drawing it out by a long rake provided for the purpose.

Lastly, the 7 fatal accidents above ground causing 7 deaths:

1st, an engineer caught between two cog wheels as he was standing upon them outside the engine house to examine the winding rope, the other engineer not knowing that he was there:

2nd, another engineer caught whilst oiling cog wheels in motion:

3rd, a sawyer struck by a piece of wood that was thrown back by a circular saw.

4th, a youth struck by a prop which the weight of some horizontal pumping rods forced against him as he was putting it underneath to bear the rods up:

5th, a boy falling off a bridge by which the tramroad from the colliery crosses a river, the hook of his safety lamp having caught one of the trams:

6th, a stoker falling into a hot-water cistern:

And 7th, a shunter run over by a railway waggon as he unhooked the horse on a siding.

In addition to the fatal accidents, the reports of non-fatal accidents include 22 explosions of firedamp, and 7 explosions of powder, where personal injury was sustained.

The 22 non-fatal explosions of firedamp occurred on the 7th, 15th, and 18th January; 5th and 27th February; 2nd and 10th March; 2nd, 6th, 7th, and 23rd April; 10th and 24th May; 4th and 22nd June; 2nd and 19th July; 10th August; 29th October; 11th and 26th November, and the 8th December.

The 7 non-fatal accidents with powder were, one whilst undrilling a missed shot with an iron drill; one whilst trying with a copper drill to get a cartridge which was too large out of a shot hole; one by the shot going off as the pricker was being drawn out; one by the shot going off as the person returned too soon; one by another miner's shot bursting through the pillar into his place; and two with powder getting lighted.

In the accompanying lists I give particulars of each of the fatal accidents, and the totals of preceding years for comparison; also a copy of a circular letter that I have sent to each colliery, with the intention of putting all concerned upon their guard against the particular run which accidents have been taking.

The returns which I have obtained of the quantity of coal wrought and the number of persons employed at each colliery enable me to state that in this district during the year 1869 the number of persons employed at the collieries averaged 26,190 males above and below ground, and 88 females above ground; and that 7,020,000 tons of coal were wrought. This, with the 74 fatal accidents and 76 deaths, is at the rate of 1 fatal accident to every 354 male persons and every 94,865 tons of coal, and 1 death to every 345 male persons and every 92,368 tons of coal wrought. The information as to the persons employed and coal wrought has been given to me confidentially from every colliery except two, namely, Bent Grange (which is now closed) and Dootson Vauze. The numbers for these I have had to compute from the best information that I could obtain, and as it only forms $\frac{1}{80}$ th part of the whole, the totals may be taken as correct.

I have in every instance where it has appeared requisite made an investigation into the circumstances under which each accident has occurred, both fatal and non-fatal, and whether above or below ground, in order that steps might be taken to prevent recurrences, and to have the penalty imposed when there has been a clear violation of the law. As regards the explosion in the Hoddlesden colliery I considered that the firedamp ought not to have been allowed to remain accumulated where (although fenced off) it threatened the safety of persons in working places and travelling roads. I therefore caused proceedings to be taken before the justices at Over Darwen, when a penalty of 5*l.* was imposed. The miner who lost his life, and the fireman who with him was severely burned, contributed to the accident, thereby disentitling the surviving sufferer and the relatives of either from receiving the penalty; directions have therefore been given for the sum to be paid into the Treasury.

I have also made numerous other investigations, where no accident had occurred, but when I had reason to suppose either that there was danger which admitted of being removed, or that, as regards boys under age, the law was being contravened.

I find, on the whole, there is an increasing desire to give effect not only to all the legal requirements, but also to all reasonable precautions for safety and health, and that, with the co-operation of the miners (some of whom are almost sure to know when any

Accidents above ground.

Non-fatal accidents.

Non-fatal firedamp explosions.

Non-fatal powder explosions.

Details and precautions.

Proportion of accidents to persons employed and coal wrought.

Working of the regulations.

thing is wrong, even in the most hidden recess) the regulations may be carried out and protection afforded at the very time when it is required.

The Right Hon. Henry Austin Bruce, M.P.
Principal Secretary of State.

I have, &c.
(Signed) JOSEPH DICKINSON.

INSPECTION OF COAL MINES, MANCHESTER DISTRICT.

(Acts 23 & 24 Vict., c. 151; 5 & 6 Vict., c. 99; and 25 & 26 Vict., c. 79.)

Circular Letter sent to each of the owners, 17th January 1870.

I hereby give notice that at each colliery I require covers to be provided and used overhead when lowering or raising persons in all working pits or shafts except in those worked by a gin or a windlass, or whilst sinking or pump work is being done, or, in special cases, where written exemption is obtained from me annually.

I also take this opportunity of informing you that in the year 1869 there is an increase in the number of those accidents over which the miners themselves have most personal control, which appears to show that better discipline is required.

More than one half of the whole of the fatal accidents are from falls of roof and coal; and there is still a serious continuance of fatal accidents, especially amongst sinkers and metal men, from the careless use of powder. I have to point out that shots which have missed fire are still attempted to be undrilled, instead of making a small fresh shot near enough to fire both charges; and that the iron rammer is still used, instead of a wooden or a copper one, in getting the wadding and first part of the ramming fairly bedded.

Greater care has apparently been taken as regards ventilation; but where so many of the mines are fiery, and open lights so much preferred, the least mistake or a small sudden outburst of firedamp is almost sure to cause an explosion. It cannot therefore be too well known that the law still requires not only the working places and travelling roads thereto to be adequately ventilated, but that every other part of the mine, even if fenced off, must be in such a state as not to endanger a person in any working place or travelling road.

JOSEPH DICKINSON,
Inspector of Coal Mines,
Pendleton, Manchester.

REPORTS OF INSPECTORS OF MINES.

List of the FATAL COLLIERY ACCIDENTS, and LOSS OF LIFE arising therefrom, in the NORTH and EAST LANCASHIRE or MANCHESTER DISTRICT, under Mr. DICKINSON'S Inspection, during the Year 1869.

Date.	No. of Accidents.	Name of the Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	No. of Lives lost in Coal Mines.	
									Explosions.	Falls of Coal and Roof.
1869.	9	1. Anderton Hall.	Blackrod.	- Dewhurst, Hoyle, and Smethurst.	Gideon Higson	Boy -	11	Falling down the No. 2 pit shaft from the lower surface landing, the fence having been removed for the purpose of sending some castings down.	-	-
"	14	2. Bank Hall	Burnley	- Executors of John Hargreaves.	Henry Simpson	Pit car. -	45	Falling off a stay in the shaft whilst fixing some pipes.	-	-
"	16	3. Hoghead	Bacup	- Mrs. Ann Maden -	Zachariah Hamer -	Pit Miner -	41	Roof falling in his place of work - Burned by an explosion of powder.	-	-
"	19	4. Darcy Lever	Darcy Lever Co.	-	Thomas Holt	Ditto -	27	He was preparing to fire a shot, when a spark from a piece of fuse which his brother was trying to see if it was good, fell into a can containing about a pound of powder.	-	-
Feb.	3	5. Oak	Hollinwood	- Chamber Co.	Abraham Taylor -	Ditto -	46	Stone falling from the roof - Died to-day from injuries received from roof falling on the 29th October 1868.	-	-
"	4	6. Madams Wood	Little Hulton	- Bridgewater Trust	Thomas Hilton -	Ditto -	23	Struck by a windlass handle. The rope coiled in a heap, and then the outer coils slipped, which caused him to let go the handle, thinking the rope had broken.	-	-
"	12	7. Outwood	Outwood	- Thos. Fletcher and Sons -	Henry Crossley -	Ditto -	45	Caught between two cogwheels, the other engineer having started the engine as he was standing upon them to examine the winding rope.	-	-
"	13	8. Oak	Hollinwood	- Chamber Co.	Joseph Heap -	Engineer -	49	Roof falling in a bay where he was working with his father.	-	-
"	15	9. Shakerley	Tyldesley	- Tyldesley Co.	James Johnson -	Waggoner -	17	Roof stone falling -	-	-
"	17	10. Hartford	Oldham	- Oldham, Middleton, and Rochdale Co. (Limited.)	Charles Ashworth -	Miner -	38	Roof falling -	-	-
"	18	11. Clifton Hall	Clifton	- Andrew Knowles and Sons	William Wilkinson	Boy -	13	Roof falling in a shunt near the pit bottom.	-	-

List of Fatal Colliery Accidents.—continued.

Date.	Name of the Colliery, No. of Accidents.	Where situated.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	No. of Lives lost in Coal Mines.	Above Ground.
								Middlemores.	In Shafts.
1869, Feb. 24	12	Ringley Fold	Stonecough Darcy Lever	-	Knowles and Stott Darcy Lever Co.	-	Thos. Wolstenholme Jacob Howcroft	Miner Waggoner	50 12
,, 26	13	Darcy Lever	-	-	-	-	Shale falling from between two slips Shale falling in his father's place of work.	-	-
,, 27	14	Pendleton	-	-	Andrew Knowles and Sons	-	John Freeman	Miner	-
Mar. 2	15	Clifton Hall	Clifton	-	Ditto	-	Crushed by a wagon coming against him in the bottom of a downbow bay.	-	-
,, 4	16	Woodhouse Lane	Z. and J. Howarth	-	James Giles	-	Roof coal falling as he was taking out a chock.	-	-
,, 17	17	Greensacres	Wolstenholme Oldham	-	Lomax Harrison	-	Roof rock falling	-	-
,, 24	18	Blainscough Hall.	Coppull	-	John Lees	-	Caught by a moving cogwheel of the underground engine as he was adjusting a disconnected part of the machinery near to it.	-	-
April 2	19	Wet Earth	Clifton	-	James Darlington	-	Falling down No. 1 shaft. It ap- peared that he got overbalanced as he was leaning over to loosen a slack which had stuck in a water-pipe.	-	-
,, 27	20	Rowley	Burnley	-	Clifton and Kearsley Co.	-	Roof coal, which was being taken down, falling upon him.	-	-
,, 13	21	Clifton Moss	Clifton	-	Executors of J. Hargreaves	-	Falling off a bridge by which the surface tramroad crosses a river, the hook of his safety lamp having caught a tram and given him a jerk.	-	-
,, 14	22	Pendlebury	Pendlebury	-	William Nuttal	-	Burned by an explosion of firedamp in the 5/4 mine. The gas issued suddenly out of the strata when some roof fell.	1	-
,, 20	23	Ferney Field	Chadderton	-	James Collier	-	Some clay, with which the bottom of a shaft had been puddled, fal- ling upon him as he was under- mining for the purpose of remov- ing it. He was incautiously underneath, instead of using a long rake that was provided.	-	-
C 3					Thomas Tunstall	-	Roof stone falling from a pot hole.	1	-
					Andrew Knowles and Sons	-	Ditto	42	-
					Elisha Lingard	-	Ditto	-	-
					Chamber Co.	-	Thos. Latham	-	-
							Ditto	24	-

REPORTS OF INSPECTORS OF MINES.

List of Fatal Colliery Accidents—continued.

Date.	Name of the Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.		No. of Accidents.	No. of Accidents.	No. of Lives lost in Coal Mines.
							Explosions.	Blasts of Coal and Boot.	In Shaft.	Miscellaneous.	Above ground.
1869. April 20	24 New Watergate and Peel Hall.	Little Hulton	James and Wm. Roseoe	Isaac Atkinson	Waggoner	20	Suffocated in firedamp which became accumulated in consequence of the roof having fallen and closed the air-way, and into which he incautiously entered to oil a wheel past the danger signal.			—	—
" 26	Lords Fields	Ashton-under-Lyne	Lords Fields Co.	John Golden	Dayman	—	Crushed by a stone which fell from the roof and slid 110 yards upon the rails down the engine brow to where he was at work. His assistant heard it coming, and escaped into a refuge place 4 yards off. Coal falling as he was drilling for a shot.		—	1	—
" 28	Ellenbrook	Tyldesley	Bridgewater Trust	Samuel Musket	Miner	21	Jerked out of the tub as he was descending the shaft, one of the hooks having broken.			—	1
" 29	27 Bull's Head	Oldham	Theo. Mellodew and Co.	George Haigh	Waggoner	13	A shot which had missed fire in the sinking pit going off as they were drilling it out.			—	2
May 5	28 Aspin	Oswaldtwistle	Theo. Simpeon and Co.	Peter Hartley Joseph Townley	Sinker	27	Coal which he was taking down falling upon him.			—	—
" 10	29 Botany Bay	Clifton	Clifton and Kearsley Co.	Wm. Johnson	Ditto	39	Stone falling from the roof as he was waggoning.			—	—
" 12	30 Limehurst	Ashton-under-Lyne	Limehurst Co.	John Howard	Boy	12	Stone falling from between two slips in the roof.			—	—
" 11	31 Chain	Westhoughton	Wm. Ford Hulton	Thos. Higson	Miner	—	Coal falling as he was about to wedge it down, in the Doe mine.			—	—
June 9	32 Manor	Kearley	Clifton and Kearsley Co.	Henry Kirkman	Ditto	23	Coal falling in the Trencherbone mine.			—	—
" 9	33 Spindlepoint	Ditto	Ditto	John T. Nelson	Ditto	20	A shot going off in being undrilled. It was supposed that, whilst ramming, water had got amongst the powder in the hole; it was then filled with water, and undrilling commenced, when the shot went off.			—	—
" 14	34 Blainsough Hall.	Coppull	James Darlington	Adam France	Sinker	—				—	1

List of Fatal Colliery Accidents—continued.

Date.	Name of the Colliery.	Where situated.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	No. of Lives lost in Coal Mines.	
								Above ground.	Miscellaneous.
1869. June 16	35 Pole	Over Darwen	William Pickup - Darcy Lever Co. -	Thomas Harwood - R. W. Gornall -	Waggoner - Taker-off -	18 13	Falling out of a bucket when coming up a windlass shaft. Crushed, by waggons which ran from the top to the bottom of a self-acting inclined plane, the hooker-on at the top having hooked them to a piece of loose chain instead of to the coupling chain at the end of the rope.	-	-
„ 28	36 Darcy Lever	Darcy Lever	-	-	-	-	Struck by a piece of wood which was thrown back by the circular saw at which he was at work.	-	1
„ 30	37 Bent, Gingham	Little Lever	Thomas Fletcher -	James Butterworth -	Miner -	56	Crushed by a waggon in a brow. It had got off the rails, and he was lifting it on without securely fastening the handle of the windlass to which it was attached by a rope.	-	-
„ „	38 Hapton	Hapton	J. S. Witham -	Thos. Blessard -	Sawyer -	41	Caught by the connecting rod of the underground engine as he was adjusting the cottrell.	-	1
July 1	39 Outwood	Outwood	Thomas Fletcher and Sons	Wm. Longworth -	Miner -	32	Coal and shale falling - Rock falling from the roof - Roof falling - Ditto - Roof coal falling - Ditto - Caught by the chain in a self-acting incline, the weight having dragged away the prop to which the wheel was attached.	-	-
„ 9	40 Bank House	Shaw	-	Oldham, Middleton, and Rochdale Co. (Limited).	Wm. Meadowcroft	Engineer -	33	Crushed between the roof and a waggon on which he was riding up the engine brow.	-
„ 12	41 Brightmet	Brightmet	Thomas Fletcher -	Henry Hurdman -	Miner -	—	Coal falling - Rock falling from the roof - Roof falling - Ditto - Roof coal falling - Ditto - Caught by the chain in a self-acting incline, the weight having dragged away the prop to which the wheel was attached.	-	-
Aug. 4	42 Brandwood Moor	Waterfoot	Edw. Ashworth and Co. -	Ellis Ratcliffe -	Waggoner -	11	Crushed between the roof and a waggon on which he was riding up the engine brow.	-	-
„ 7	43 Pendleton	Pendleton	Andrew Knowles and Sons	Stephen Davis -	Miner -	—	Crushed between the roof and a waggon on which he was riding up the engine brow.	-	-
„ 18	44 Rocher Bye Pit	Ashton-under-Lyne	Fairbottom Co. -	John Berry -	Fireman -	36	Crushed between the roof and a waggon on which he was riding up the engine brow.	-	-
„ 20	45 Mangnall's	Worsley	Bridgewater Trust -	Wm. Whittaker -	Miner -	69	Crushed between the roof and a waggon on which he was riding up the engine brow.	-	-
„ 21	46 Great Lever	Great Lever	Earl of Bradford -	Saml. Shuttleworth -	Ditto -	64	Crushed between the roof and a waggon on which he was riding up the engine brow.	-	-
„ 30	47 Bank	Little Hulton	Bank Co. -	James Heathcote -	Ditto -	43	Crushed between the roof and a waggon on which he was riding up the engine brow.	-	-
Sept. 10	48 Manor	Kearsley	-	Clifton and Kearsley Co. -	Dayman -	47	Crushed between the roof and a waggon on which he was riding up the engine brow.	-	-
„ 49	Rose Hill	Bolton	-	Samuel Boardman -	Miner -	27	Crushed between the roof and a waggon on which he was riding up the engine brow.	-	-

List of Fatal Colliery Accidents—continued.

Date.	No. of Accidents	Name of the Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	No. of Lives lost in Coal Mines.	Above ground.
									Mines of Coal and Roof.	In Shallow.
1869, Sept. 14	50	Pendlebury	-	Pendlebury	-	Andrew Knowles and Sons	Elias Pierce	Miner	-	Burnt by a shot going off as he was stemmimg it.
" " 51	Hoddlesden	-	Over Darwen	-	Joseph Place	-	Robert Hurst	Ditto	-	Explosion of firedamp in the lower mine. The opening of a door reversed the air current and turned out some gas, which was known to be accumulated, on to an open light.
" 15 52	Agecroft	-	Pendlebury	-	Andrew Knowles and Sons	John Williams	-	Ditto	-	Coal falling. He had taken out the sprags to get the coal down, and finding that it did not come down at once, he resumed hoiling without resetting the sprags, when it suddenly fell.
" 18 53	Doffocker	-	Bolton	-	Thomas Cross	-	Wm. Blinkhorn	Waggoner	10	Roof stone falling in the waggon road.
" 20 54	New Watergate and Peel Hall.	-	Little Hulton	-	James and Wm. Roscoe	-	Robert Moore	Engineer	22	Caught by the cogwheels which he was oiling when the engine was in motion.
" 24 55	Bents	-	Little Lever	-	Thomas Fletcher	-	Samuel Pilling	Miner	45	Earth between the coals of the 10-foot mine falling upon him. Helplessly, he was working underneath when another miner was getting coal overhead.
" 25 56	Wharton Street Gate	-	Little Hulton	-	Francis Charlton and Matthew Bennett	-	William Hurst and Henry Isherwood	Ditto Ditto	-	Roof falling
" 26 57	Mooley Common	Tyldeley	-	Bridgewater Trust	-	Jos. Wolstenholme James Evans	Miner	Fireman Engineer	22	Roof falling in his father's place
Oct. 5	59	Pendleton	-	Andrew Knowles and Sons	-				55 28	The winding drum came out of gear as they were descending the pumping pit. It would appear that the engineer omitted to put in the stopblock.
" 12 60	Pendlebury	-	Ditto	-	Stephen Loveley	-	Stephen Loveley	Miner	-	Roof, which he was taking down, falling upon him.
" 18 61	Clifton Hall	-	Ditto	-	Matthew Grime	-	Matthew Grime	Ditto	-	Roof falling in an abandoned place
					John Lees	-	John Lees	Waggoner	-	Roof, &c. falling when taking out chocks.

MR. DICKINSON'S REPORT.

List of Fatal Colliery Accidents—continued.

Date.	No. of Accident.	Name of the Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	Number of Lives lost in Coal Mines.					
									Explosions.	Knalls or Coal and Roof.	In Shafes.	Miscellaneous.	Above Ground.	
1869. Oct. 26	62	Victoria	-	Baxenden	-	Hargreaves, Ashworth, and Co.	Robert Tomlinson	Miner	-	46	Roof falling as he was taking out a prop.	-	1	-
„ 29	63	Black Moss, New	Radcliffe	-	Thomas Fletcher	-	Henry Marsden	Waggoner	-	13	Crushed by the cage being started as he was getting in, another boy having given the signal unknown to the hooker-on.	-	1	-
Nov. 2	64	Moston	-	Moston	-	Executors of J. Stanley	J. Butterworth	Miner	-	—	Coal falling	-	1	-
„ 3	65	Howe Bridge	-	Atherton	-	John Fletcher and others	Wm. Landers	Ditto	-	30	Coal and roof falling as he was working away a pillar.	-	1	-
„ 5	66	Tonges Field	-	Dixon Green, Farnworth.	-	Bridgewater Trust	Wm. Tonge	Waggoner	-	17	Struck by a prop which was forced against him by the weight as he was putting it underneath to bear up some pump rods. The deceased worked at another pit belonging to the trustees, and was only lending the engineer his help.	-	1	-
„ 23	67	Park Hall	-	Blackrod	-	Arley Main Co.	-	Dayman	-	36	Roof falling as he was drawing props.	-	1	-
Dec. 1	68	Tonge	-	Bolton	-	Jethro Scowcroft	-	Shipper-bottom.	Waggoner	-	Burned by an explosion of firedamp. A little gas accumulated in a side place where none had been seen before, and into which the boy went to eat his supper.	1	-	-
„ 8	69	Outwood	-	Outwood	-	Thomas Fletcher and Sons	Wm. Whittle	Boy	-	12	Crushed by the cage and then falling down the shaft from a mouthing midway, as he was attempting to get into the cage after the signal to go on had been given.	-	1	-
„ 9	70	Westleigh	-	Westleigh	-	James Diggle	-	Shunter	-	—	Run over by a wagon after unhooking the horse on the surface siding.	-	—	1
„ „	71	Buckley Lane	-	Little Hulton	-	Bridgewater Trust	-	Boy	-	15	Falling down the shaft from the Polder mine mouthing, just after he had stepped out of the cage.	-	—	1

List of Fatal Colliery Accidents—continued.

Date.	No. of Accidents.	Name of the Colliery.	Where situated.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	Number of Lives Lost in Coal Mines.					
									Explorations.	Pails of Coal and Root.	In Shafts.	Miscellaneous.	Above ground.	
869.	Dec. 13	72	Kearsley	-	Samuel Scowcroft	-	Thos. Forrest	-	Blacksmith	22	Struck by the cage being wound over the top of the engine house. The spring rod on the reversing lever broke with the catch in a notch when the steam was on, and the load near the top of the shaft.	-	-	1
" 18	73	Greencraces	Oldham	-	Leeses and Co.	-	Joseph Cocker	-	Stoker	55	Scalded in a hot-water cistern which he fell into when crossing over it on a plank.	-	-	1
" 20	74	Brimrod	Rochedale	-	Brimrod Co.	-	Robert Lomas	-	Miner	29	Falling down the shaft as he was about to descend. There was a rail, but he went underneath, apparently supposing the cage was up at that side.	-	1	-
Total, 74 accidents and 76 deaths										3	39	12	15	7

LIST of the OWNERS and COLLIERIES in the MANCHESTER DISTRICT of LANCASHIRE, specifying those where FATAL ACCIDENTS have taken place, in the Year 1869.

Owners.	Address.	Number	Collieries.	Where situated.	Fatal Accidents.	Lives lost.
Altham Co. - -	Altham, Accrington -	1	Altham - -	Altham.		
Arley Main Co. - -	Blackrod, Chorley -	2	Park Hall - -	Blackrod	1	1
Edward Ashworth and Co. -	Cowpe, Waterfoot, Manchester.	3	Brandwood Moor -	Brandwood Moor.	1	1
Ralph Ashworth and Co. -	Littleborough -	4	Stanning - -	Littleborough.		
Astley and Tyldesley Coal and Salt Co. (Limited).	Tyldesley, Manchester.	5	Cross Hillock -	Astley.		
Joseph Bagnall - -	Royton, Oldham -	6	Nook - -	Tyldesley.		
Bailey and Dronfield - -	Oldham - -	7	Tyldesley -	Ditto.		
Bank - -	Little Hulton, Bolton	8	Higginshaw -	Royton.		
Bankhouse Co. - -	Bag slate, Rochdale -	9	Park - -	Oldham.		
Bardsley Co. - -	Ashton-under-Lyne -	10	Bank - -	Little Hulton -	1	1
James Barker - -	Charnock Richard, Chorley.	11	Bankhouse -	Bagslate.		
James Barlow - -	Entwistle, Bolton -	12	Bardsley -	Bardsley.		
Exors. of Joseph Barnes -	Church, Accrington	13	Pemberton House -	Charnock Richard.		
Matthew Bennett and Brothers.	Little Hulton, Bolton	14	Cranberry Moss -	Over Darwen.		
William Berry - -	Bag slate Moor, Rochdale.	15	Dunkenhalgh Park -	Church.		
John G. Blackburne Booth and Marland - -	Oldham - -	16	Street Gate -	Little Hulton -	1	1
The Earl of Bradford -	{ Great Lever Collieries, Bolton.	17	Bag slate Moor -	Bag slate.		
Bradford Co. - -	Bradford, Manchester	18	Lowside - -	Oldham.		
James Brearley and Son -	Brandwood Moor, Waterfoot.	19	Honeywell Lane -	Ditto.		
Bridgewater Trustees -	Colliery Offices, Walkden, Bolton.	20	Great Lever -	Great Lever -	1	1
		21	Great Lever Works -	Ditto.		
		22	Hacken - -	Darcy Lever.		
		23	Raikes - -	Great Lever.		
		24	Bradford - -	Manchester.		
		25	Brandwood Moor -	Brandwood Moor.		
		26	Ashtonsfield -	Little Hulton.		
		27	Barracks - -	Ditto.		
		28	Bridgewater -	Worsley.		
		29	Buckley Lane -	Little Hulton -	1	1
		30	Burgess Land -	Ditto.		
		31	Delph - -	Middle Hulton.		
		32	Edge Fold - -	Worsley.		
		33	Ellenbrook - -	Tyldesley -	1	1
		34	Gatley - -	Ditto.		
		35	Howarths Field -	Farnworth.		
		36	Linnishaw - -	Worsley.		
		37	Lords Moss Field -	Farnworth.		
		38	Madams Wood -	Little Hulton -	1	1
		39	Mangnalls - -	Worsley -	1	1
		40	Mooley Common -	Tyldesley -	1	2
		41	Sanderson - -	Worsley.		
		42	Saplingfield - -	Middle Hulton.		
		43	Tonges Field - -	Farnworth -	1	1
		44	Wardley Coppice Field.	Worsley.		
Brimrod Co. - -	Rochdale - -	45	Brimrod - -	Rochdale -	1	1
Brinsop Hall Co. - -	Westhoughton, Bolton	46	Brinsop Hall - -	Westhoughton.		
Brooks and Pickup - -	Towneley, Burnley	47	Cupola - -	Hameldon.		
Orlando Brothers - -	Livesey, Blackburn -	48	Towneley - -	Burnley.		
John Buckley - -	Healey, Rochdale -	49	Wholaw Nook -	Wholaw.		
Adam Bullough - -	Waterside, Darwen -	50	Livesey Fireclay Works.	Livesey.		
Butterworth and Brooks - -	Sunnyside, Rawtenstall.	51	Whitewell - -	Healey.		
Edmund Butterworth and Sons.	Crompton, Oldham -	52	Waterside - -	Eccleshill.		
The Exors. of James Butterworth.	Bacup - -	53	Cragg - -	Bacup.		
James Butterworth and Son	Rochdale - -	54	Crow Knowl -	Crompton.		
		55	Oaken Clough -	Bacup.		
		56	Greenbooth and Knowl.	Wolstenholme.		

List of the Owners and Collieries, &c. in the Manchester District—continued.

Owners.	Address.	Number	Collieries.	Where situated.	Fatal Accidents.	Lives lost.
Chamber Company - -	Hollinwood - -	57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74	Oak - - Chamber - - Denton Lane and Ferney Field. Stockfield - - Wharton - - Botany Bay - - Bus - - Robin Hood - - Manor - - Spindlepoint - - Wetearth - - Copy - - Union - - Gladwick - - Coney - - Dofcocker and Vallots. Crook Bank - - Darcy Lever - -	Hollinwood - - Oldham. Chadderton - - Ditto. Little Hulton. Clifton - - Ditto. Ditto. Kearsley - - Ditto - - Clifton - - Cliviger. Ditto. Oldham. Over Darwen. Halliwell - - Wardle. Darcy Lever - -	2 1 1 1 1 1 1 2 1 1 1	2 1 1 1 1 1 1 2 1 1 1
Francis Charlton - -	Little Hulton, Bolton	60 61 62 63 64 65 66 67 68 69 70 71 72 73 74				
Clifton and Kearsley Co. - -	Clifton, Manchester	64 65 66 67 68 69 70 71 72 73 74	Robin Hood - - Manor - - Spindlepoint - - Wetearth - - Copy - - Union - - Gladwick - - Coney - - Dofcocker and Vallots. Crook Bank - - Darcy Lever - -	Kearsley - - Ditto. Ditto. Clifton - - Cliviger. Ditto. Oldham. Over Darwen. Halliwell - - Wardle. Darcy Lever - -	2 2 1 1 1	2 2 1 1 1
Cliviger Co. - -	Cliviger, Burnley	68 69 70 71 72 73 74				
James Collinge and Co. - -	Oldham - -	70	Gladwick - -	Oldham.		
Coney Co. - -	Over Darwen - -	71	Coney - -	Over Darwen.		
Thomas Cross - -	Halliwell, Bolton	72	Dofcocker and Vallots.	Halliwell - -	1	1
Charles Crossley - -	Wardle, Rochdale	73	Crook Bank - -	Wardle.		
Darcy Lever Co. - -	Darcy Lever, Bolton	74	Darcy Lever - -	Darcy Lever - -	3	3
James Darlington - -	Blainscough Hall Colliery, Coppull, Chorley.	75 76 77 78 79 80 81 82 83 84 85 86 87	Blainscough Hall - - Springfield - - Welch Whittle - - Cartridge Nook - - Handle Hall - - Land - - South Grain - - Toadleach - - Todmorden Moor - - Tooter Hill - - Wallnook - - Anderton Hall - - Rigby Hill - -	Coppull - - Ditto. Welch Whittle. Wardle. Calderbrook. Shawforth. Dulesgate. Healey. Dulesgate. Bacup. Wardle. Blackrod - - Ditto.	2	2
James Dearden - -	The Orchard, Rochdale.	81 82 83 84 85 86 87				
Dewhurst, Hoyle, and Smethurst. - -	Anderton Hall Colliery, Blackrod, Chorley.	86 87	Anderton Hall - - Rigby Hill - -	Blackrod - - Ditto.	1	1
James Diggle - -	Westleigh and Heyfield Collieries, Leigh, Manchester.	88 89 90 91 92 93 94 95	Heyfield - - Owens - - Westleigh - - Redshaw - - Scout Moor, - - Shipperbottom - - Flash - - Over Darwen - -	Westleigh. Ditto. Ditto. Ditto. Shuttleworth. Walmersley. Eccleshill. Over Darwen.	1	1
Exors. of Lawrence Duckworth. - -	Sheep Hey, Ramsbottom.	91 92 93				
Eccleshill Coal and Coke Co. - -	Over Darwen - -	94	Brickworks.			
Ralph Entwistle - -	Over Darwen - -	95				
Fairbottom Co. - -	Fairbottom Collieries Ashton-under-Lyne.	96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116	Broad Oak and Moss - - Dock - - Hartshead - - Heys - - Nelson and Rocher - - Woodpark - - Bank Hey - - Old Lyons - - Wilderswood - - Brotherod - - Higher Shore - - Ladyshore - - Chanters - - Gibfield - - Howbridge - - Stopes - - Bents - - Black Moss - - Breightmet - - Radcliffe Moor - - Great Boys - -	Broadoak. Fairbottom. Hartshead. Ashton-under-Lyne. Park - - Bardsley. Wardle. Over Darwen. Rivington. Rochdale. Littleborough. Little Lever. Atherton. Ditto. Ditto. Little Lever. Ditto. Radcliffe. Breightmet - - Ainsworth. Tyldeley.	1	1
Edmund Fairburn - -	Wardle, Rochdale	102				
Fish and Holden - -	Over Darwen	103				
Nicholas Fish - -	Rivington, Bolton	104				
H. H. Fishwick and Co. - -	Rochdale - -	105				
James Fletcher and Brothers - -	Littleborough - -	106				
John Fletcher - -	Little Lever, Bolton	107				
John Fletcher and others - -	Atherton Colliery, near Manchester.	108 109 110 111 112 113 114 115 116	Chanters - - Gibfield - - Howbridge - - Stopes - - Bents - - Black Moss - - Breightmet - - Radcliffe Moor - - Great Boys - -			
Thos. Fletcher - -	Bradley Fold Collieries, Little Lever, Bolton.	112 113 114 115				
Ditto - -	Great Boys Colliery, Tyldeley.	116				
Thos. Fletcher and Sons - -	Near Manchester	117	Outwood - -	Outwood - -	3	3
Exors. of Thos. Fogg - -	Edgeworth, Bolton	118	Horrocks Court - -	Edgeworth.		
Exors. of Richd. Fort - -	Great Harwood Colliery, near Accrington.	119 120	Great Harwood - - Martholm - -	Great Harwood - - Ditto.		

List of the Owners and Collieries, &c. in the Manchester District—continued.

Owners.	Address.	Number.	Collieries.	Where situated.	Fatal Accidents.	Lives lost.
John Gerrard -	Westhoughton, Bolton	121	Albert -	Westhoughton.		
John Gerrard and Son -	Farnworth, Bolton -	122	Clamerclough Pottery.	Farnworth.		
John Gibson and Co. -	Little Hulton, Bolton	123	Smithfold -	Little Hulton.		
John Gregory -	Leigh, Manchester -	124	Snapes -	Westleigh.		
Reuben Haigh and Co. -	Walsden, Todmorden	125	Foulclough -	Todmorden.		
Hall and Rogers -	Smithy Bridge, Rochdale.	126	Cleggswood Pottery	Littleborough.		
James Hardcastle -	Firwood, Bolton -	127	Bradshaw and Harwood.	Harwood.		
Ditto -	Bolton -	128	Breightmet -	Breightmet.		
Exors. of James Hardman -	Stacksteads -	129	Wellclough -	Stacksteads.		
		130	Bank Hall -	Burnley -	1	1
		131	Burnt Hills -	Wholaw Nook.		
		132	Cornfield -	Gawthorpe.		
		133	Foxclough -	Colne.		
Exors. of John Hargreaves {	Burnley, &c. Collieries, Burnley	134	Gannow -	Habergham.		
		135	Hapton Valley -	Hapton.		
		136	Marsden -	Marsden.		
		137	Padiham -	Padiham.		
		138	Rowley -	Burnley -	1	1
		139	Whittlefield -	Ditto.		
		140	Cat Hole -	Broad Oak.		
Hargreaves, Ashworth and Co. -	Baxenden Colliery, Accrington	141	Hole in Band -	Accrington.		
		142	Victoria -	Baxenden -	1	1
		143	Wood Nook -	Accrington.		
		144	Brex -	Lower Whitwell Bottom.		
		145	Dean -	Water.		
		146	Foxhill -	Middle Whitwell Bottom.		
Ditto -	Rossendale Collieries, Newchurch	147	Grime Bridge -	Ditto.		
		148	Scar End -	Ditto.		
		149	Meadows -	Bacup.		
		150	Old Clough -	Ditto.		
		151	Swinshaw -	Crawshaw Booth.		
		152	Stacksteads -	Stacksteads.		
Haugh Hey Co. -	Rochdale -	153	Haugh Hey -	Haugh Hey.		
John Haworth -	Bury -	154	Cheesden Bar -	Bury.		
Heaton and Co. -	Heath Charnock Pottery, Chorley.	155	Heath Charnock -	Heath Charnock		
Heskin Hall Co. -	Heskin, Chorley -	156	Heskin -	Heskin.		
Abraham Hill -	Whitworth, Rochdale	157	Freeholds Rock View.	Whitworth.		
John and Ralph Holden -	Over Darwen -	158	Back-o'-th'-Height	Blacksnape.		
Zech. and James Howarth -	Rochdale -	159	Woodhouse Lane -	Woodhouse Lane	1	1
Wm. Ford Hulton -	Bolton -	160	Hulton and	Hulton -	1	1
		161	Hulton Park -	Ditto.		
Kay and Wilks -	Oldham -	162	Little End -	Oldham.		
Kershaw Brothers -	Littleborough -	163	Longley Hey -	Longley Hey.		
William Knight -	Horwich, Bolton -	164	Newfields -	Horwich.		
Andrew Knowles & Sons -	Pendlebury, Manchester.	165	Agecroft -	Pendlebury -	1	1
		166	Clifton Hall -	Clifton -	3	3
		167	Clifton Moss -	Clifton -	1	1
		168	Pendlebury -	Pendlebury -	3	3
		169	Pendleton -	Pendleton -	3	3
Ditto -	Little Lever, Bolton	170	Farnworth Bridge -	Little Lever.		
		171	Fearneyside -	Ditto.		
		172	Foggs -	Darcy Lever.		
		173	Rivin, New -	Little Lever.		
Ditto -	Sharples, Bolton	174	Sharples -	Sharples.		
Knowles and Hall -	Radcliffe Colliery, near Manchester.	175	Radcliffe -	Radcliffe.		
		176	Bank Top -	Ditto.		
Knowles and Stott -	Stoneclough, Kearsley, Manchester.	177	Little Hey -	Stoneclough.		
		178	Ringleyfold -	Ringley -	1	1
		179	Singingclough -	Kearsley.		
Executors of James I. Law -	Bacup -	180	Greave New -	Bacup.		
James Leach -	Kitcliffe, Rochdale -	181	Elpit Edge -	Butterworth.		
Thomas Leach -	Stacksteads -	182	Lee -	Bacup.		
Samuel Leather -	Blackrod, Chorley -	183	Dootson Vauze -	Blackrod.		
Benjamin and Joseph Lees -	Britannia, Bacup -	184	Freeholds -	Facit.		
		185	New Line -	Bacup.		

List of the Owners and Collieries, &c. in the Manchester District—continued.

Owners.	Address.	Number.	Collieries.	Where situated.	Fatal Accidents.	Lives lost.
Lees and Ashworth	Hollingworth, Littleborough.	186	Syke	Hollingworth.		
Lees and Co.	Oldham	187	Greenacres	Oldham	2	2
Leeses, Jones, and Co.	Ditto	188	Holebottom	Ditto.		
		189	Rhodes Bank	Ditto.		
Lees and Mayall	Greenacres Moor, Oldham.	190	Little Mine	Higher Barrowshaw.		
Lees and Tetlow	Littleborough	191	Light Owlers and Pike House.	Littleborough.		
Leigh and Bradbury	Denton, Manchester	192	Broomstair	Denton.		
Ditto	Clayton, Manchester	193	Clayton	Clayton.		
Limehurst Company	Ashton-under-Lyne	194	Limehurst	Ashton-under-Lyne.	1	1
Lomax and Co.	Rochdale	195	Smallbridge	Smallbridge.		
John Lomax and Co.	Rochdale	196	Old Sink and Greenland.	Rowley Moor.		
John Lord	Bacup	197	Deansgrevae	Bacup.		
Samuel Lord and Brothers	Wolstenholme, Rochdale.	198	Bamford Closes	Wolstenholme.		
Lords Fields Co.	Ashton-under-Lyne	199	Lords Fields	Ashton-under-Lyne.	1	1
Mrs. Ann Maden	Bacup	200	Hogshead	Bacup	1	1
Messrs. Marland	Hollinwood, Manchester.	201	Bower	Hollinwood.		
George Maxwell	Bacup	202	Change Greave Clough Parrocks	Bacup.		
Adam Mason	Horwich, Bolton	203	Winter Hill	Horwich.		
Mayall and Seddon	Oldham	204	Lower Moor	Oldham.		
Meadow Head Co.	Rochdale	205	Meadow Head	Wolstenholme.		
George Mellodew	Oldham	206	Hodgeclough	Oldham.		
Thomas Mellodew and Co.	Moorside, Oldham	207	Bulls Head	Moorside	1	1
E. D. Milnes and Brother	Birtle, Bury	208	Cob House and Lark Mount.	Birtle.		
Moscrop Brothers	Wolstenholme, Rochdale.	209	Red Lumb	Wolstenholme.		
John Newby	Millhouses, Hornby, Lancaster.	210	Smear Hall	Wray-with-Botton.		
Peter Nightingale and Co.	Worsley, Manchester	211	Mesne Lea	Worsley.		
Norley Hall Co.	Coppull, Chorley	212	Coppull Hall	Coppull.		
Oldham, Middleton and Rochdale Co. (Limited).	Edge Lane, Oldham	213	Bankhouse	Crompton	1	1
		214	Sholver	Ditto.		
		215	Boarshaw	Middleton.		
		216	Hopwood	Ditto.		
		217	Hanging Chadder	Rochdale.		
		218	Low Crompton	Ditto.		
		219	Hartford	Oldham	1	1
		220	Jubilee	Crompton.		
		221	Lee	Chadderton.		
		222	Robin Hill	Oldham.		
		223	Withnell Fireclay Works.	Withnell.		
John Parkinson Parke	Withnell, Chorley					
Wm. Thornton Parks	Bury	224	Elton	Elton.		
Andrew Peake	Horwich, Bolton	225	Wildersmoor	Horwich.		
Wm. Pickup	Over Darwen	226	Pole	Over Darwen	1	1
Joseph Place	Ditto	227	Hoddlesden	Hoddlesden	1	1
Platt and Lees	Hollinwood	228	Limeside	Limeside.		
Thos. Ramsbottom and Sons	Birtle, Bury	229	Birtle Dean	Birtle.		
William Ramsden	Tyldesley	230	Messhing Trees	Tyldesley.		
		231	Shakerley	Shakerley.		
Ralph Rawstron	Whitworth, Rochdale	232	Bridge Mills	Whitworth.		
Ditto	Bagslate, Rochdale	233	Old Clap Gate	Bagslate.		
Rawstrons and Stott	Littleborough	234	Rake Pottery	Littleborough.		
Ridings Co.	Wardle, Rochdale	235	Ridings	Wardle.		
Rochdale Brick and Tile Co. (Limited).	Summit, Littleborough	236	Chelburn	Summit.		
John Rosbottom and Sons	Heath Charnock, Chorley.	237	Victoria	Rumworth.		
James and William Roscoe	Little Hulton, Bolton	238	New Lester	Tyldesley.		
		239	New Watergate and Peel Hall.	Little Hulton	2	2

List of the Owners and Collieries, &c. in the Manchester District—continued.

Owners.	Address.	Number.	Collieries.	Where situated.	Fatal Accidents.	Lives lost.
Roscow and Lord	Rochdale	240	Chadwick Hall	Rochdale.		
Ditto	Ditto	241	Crow Nest	Milnrow.		
Ditto	Farnworth, Bolton	242	Stonehill	Farnworth.		
Peter Rothwell	Denton, Manchester	243	Denton	Denton.		
Rylands and Sons	Radcliffe, Manchester	244	Cockey Moor	Black Lane.		
Schofield & Co.	Smallbridge, Rochdale	245	Dearnley	Smallbridge.		
Jethro Scowcroft	Bolton	246	Tonge	Bolton	1	1
Samuel Scowcroft	Kearsley, Bolton	247	Kearsley	Kearsley	1	1
Ditto	Burnden, Bolton	248	Rose Hill	Burnden	1	1
John Seddon	Darcy Lever, Bolton	249	Top o' th' Meadow	Darcy Lever.		
Thomas Shaw and Sons	Haughton, Manchester	250	Haughton and	Haughton.		
		251	Haughton Green	Ditto.		
Sheep Bank Co.	Littleborough	252	Sheepbank	Littleborough.		
Shorey Bank Co.	Over Darwen	253	Shorey Bank	Over Darwen.		
Eccles Shorrock, Brothers and Co.	Ditto	254	Dogshaw	Ditto.		
Thomas Simpson	Blackburn	255	Lower Darwen	Lower Darwen.		
		256	Aspin	Oswaldtwistle	1	2
Thomas Simpson and Co.	Oswaldtwistle Collieries, near Accrington	257	Belthorn	Ditto.		
		258	Broadfield	Ditto.		
		259	Duckworth Hall	Ditto.		
		260	Mossfield	Ditto.		
		261	Stanhill	Ditto.		
Sladen Co.	Sladen, Littleborough	262	Sladen	Sladen Mill.		
John Smethurst	Higginshaw Lane, Oldham.	263	Salmon Field	Royton.		
Smithson and Butterworth	Facit, Rochdale	264	Hudclough	Facit.		
John Speakman	Westleigh, Manchester.	265	Broadfield	Westleigh.		
Stand Lane Co.	Radcliffe	266	Stand Lane	Pilkington.		
Exors. of John Stanley	Failsworth, Manchester.	267	Whitefield	Pilkington.		
James Stott and Co.	Kearsley, Bolton	268	Moston	Moston	1	1
Richard and William Stott	Rochdale	269	Unity Brook	Kearsley.		
		270	Ashworth	Ashworth.		
Samuel Stott	Wardle, Rochdale	271	Butterworth Hall	Milnrow.		
Sunderland Brothers	Moorside, Oldham	272	Tunhill	Ditto.		
James Taylor	Bacup	273	Hey Clough	Wardle.		
		274	High Field	Moorside.		
		275	New Barn Brick-works.	Bacup.		
John Taylor and Co.	Littleborough	276	Hollingworth	Hollingworth.		
Thomas Temperley	Todmorden	277	Clough Head Brick-works.	Dulesgate.		
Townsend and Co.	Greavey Collieries, Bacup	278	Britannia	Bacup.		
		279	Greave	Ditto.		
		280	High Houses	Ditto.		
Edmund Turner	Birtle, Bury	281	Openshaws	Birtle.		
Turton Moor Co.	Turton, Bolton	282	Turton Moor Brick-works.	Turton.		
Samuel Tweedale	Rochdale	283	Tonnacliffe	Tonnacliffe.		
Jacob Tweedale and Sons	Ditto	284	Healey Hall Bottoms.	Healey Hall.		
Tyldesley Co.	Tyldesley	285	Shakerley	Shakerley	1	1
		286	Tyldesley	Tyldesley.		
		287	Combermere	Ditto.		
Eli Walsh	Over Darwen	288	Heyfold	Over Darwen.		
Thomas Whaley	Blackrod, Chorley	289	Blackrod	Blackrod.		
The Whitaker Co.	Whitaker, Littleborough.	290	Whitaker	Whitaker.		
Thomas Whittle	Blackrod, Chorley	291	Marklands	Blackrod.		
	Chorley	292	Duxbury and Chorley.	Duxbury.		
Charles Whowell	Two Brooks, Totton, Bury.	293	Monk's Bank	Chorley.		
				Quarltion.		
Wigan Coal and Iron Co. (Limited).	Westleigh, Manchester.	294	Nos. 1 and 2	Westleigh.		
John Sutcliffe Witham	Hapton, Burnley	295	Hapton	Hapton	1	1
John Woodhead	Waterfoot, Manchester.	296	Intake	Brandwood Moor		
William Woods and Son	Blackrod, Chorley	297	Scot Lane	Blackrod.		
				Total	74	76

REPORTS OF INSPECTORS OF MINES.

North and East Lancashire or Manchester District.

Year.	1852.	1853.	1854.	1855.	1856.	1857.	1858.	1859.	1860.	1861.	10 Years Average.	1862.	1863.	1864.	1865.	1866.	1867.	1868.	1869.
Separate Accidents.	60	60	73	78	73	52	60	55	55	67	63.3	56	60	60	61	55	71	61	74
Deaths	113	82	87	89	84	99	138	68	58	82	90.0	59	68	64	66	66	84	65	76

I have, &c.
 (Signed) JOSEPH DICKINSON,
 Inspector of Coal Mines.

The Right Hon. Henry Austin Bruce, M.P.,
 Principal Secretary of State,
 Whitehall.

Mr. Higson's Report.

REPORT of the WORKING of the MINES INSPECTION ACT (23 and 24 Vict. c. 151.) in the WEST LANCASHIRE and NORTH WALES DISTRICT, during the Year ended 31st December 1869.—By PETER HIGSON, Esq.

SIR,

Swinton, Manchester, February 1870.

I HAVE the honour to transmit the following annual Report of my proceedings as Inspector of the Mines of coal and ironstone in the district under my inspection, comprising West Lancashire and North Wales, together with a list of fatal casualties in and about the same, and the loss of life caused thereby, in the year 1869.

The fatality of the year under consideration will be long held in painful remembrance as being the period of three great explosions, causing in the aggregate the death of 93 persons, the loss of life from that cause being greater than in any previous year. The number of fatal casualties of all sorts has, however, been fewer than in the previous year by 25 and the loss of life by 3; while the number of fatal explosions in the year 1869 is less by 4 than in 1868 the loss of life is greater by 12. The loss of life from falls of roof and falls of coal is less by 17, and on the surface by 4. In shafts it is greater by 2, and from miscellaneous causes below ground by 4, than in the year 1868.

The causes which have produced such a lamentable result are explained in the following pages:—Explosions of gas or fire-damp have been promoted by the ignorant and incautious use of gunpowder below ground, by stinted or too little inspection of the working and other places before firing shots, and in having large quantities of gunpowder in the mine. Great loss of life has been the result of the men themselves neglecting to fix adequate supports for the roof and sides; of running trains and tubs at an unnecessary pace, regardless of persons being in the way; of travelling on engine and self-acting planes when the machinery was in motion; of approaching the eye and sides of the pit incautiously; of attempting to extinguish standing fires in mines with water; and of carelessly riding up and down the pit or shaft, and getting in and out of the cage. From these causes 101 fatal accidents have happened, and 234 persons have been killed within the year.

Those who have no knowledge whatever of coal mines, but who are acquainted in some measure with the character and conduct of uneducated workpeople, can have no difficulty in understanding how such misadventures occur. Much as the question of more inspection has been raised and may be desirable, I have often thought that many of the casualties herein reported might have happened while I was in the mine. Often have I found men working in great danger for want of their places being propped and spragged, when props and sprags in abundance were lying out of use within a few yards. This is a state of things inspection can never reach, nor is it desirable to attempt it; the men should first do all they can, and then if necessary ask for help. Many lives have been lost in shafts and mines in which a man might live without fear of danger; in which ropes are always removed in due time, shafts walled and fitted up with proper guides, cages covered, and timber supplied in abundance; still lives are frequently lost through carelessness and by misadventures. There are, however, I must state, many works in which there is only an imaginary line between safety and danger, and there are times which occur in exhausting a mine when all works are more or less in such a state. This is occasioned by the very nature of the occupation. For working under such circumstances, negligent, careless, or even ordinary men are totally unfitted. It is therefore requisite in such places to employ none but competent men; but even that cannot be accomplished, as the supply is far below the demand. Underlookers and firemen are not, as a rule, sufficiently educated or trained to the strict observance of duty, though I must confess there are many really first-rate men among them. I find a great absence of proper discipline below ground. Orders, when given, are not carried out, and are frequently altogether disregarded by the men. In making an examination before igniting shots firemen content themselves by examining one place only, namely, that in which the shot has to be fired, instead of examining those on every side. Any underground officer who issues instructions should never neglect to see at once that they

are properly obeyed. It is not possible to estimate the value of discipline too highly; it is a most important element of success. The men, both young and old, should have this constantly impressed upon them; the special rules should be read and explained to them regularly; and the conduct of the under officers as to sobriety and punctual attendance to duty should be constantly observed and properly regulated.

Accidents it will be found occur from a variety of causes. Although considerably more lives are lost during the average of years by falls in the mines than by explosions of gas, it is only from the last-mentioned cause that public excitement and public sympathy is strongly exhibited. It may be thought that men can guard themselves against danger from any cause but explosions of gas, but that is not really the case, as in many instances the men and the firemen are alone responsible for an explosion. As to other casualties, many are misadventures, and many purely accidental occurrences inseparable from the occupation. The former sweeps away life like as it were by a whirlwind; by the latter it is gradually frittered away. The owner of a mine may provide good ventilation and make all proper provisions for safety, but unless the under-lookers, firemen, and workpeople themselves well and punctually perform their part it is of no avail. As most coal mines emit gas, its uncertain issue from the mine itself and from the goaf is only the natural result of mining; it should be constantly looked for, and an adequate quantity of air circulated through and to the end of every place in the mine sufficient to dilute and render harmless gas to any extent on its first appearance. A connexion between one place and another should be made at intervals in fiery mines of not more than 20 yards, and brattice should be kept in a perfect state. The cause of an explosion is often said to have been the result of an outburst of gas. During an extensive practice of nearly 40 years I have not known many such occurrences, and I am of opinion that they are few and far between. Explosions take place, as a rule, from neglecting to observe the above regulations, and by firing shots (blasting) in a vitiated atmosphere, or near a quantity of impounded or accumulated gas, which becomes ignited by the flame. Shots frequently blow out, particularly when the resistance has not been lessened by cutting or nicking the side, and produce great flame. I have known the flame of a blown-out shot extend 80 yards from the shot hole. Such extent of flame would ignite gas in an adjoining place, and, perhaps, the rarefaction would liberate it from its confinement. I have not been able to attribute the cause of some of the explosions of the year to anything but the absence of ordinary precaution, and it is much to be regretted that the parties blameable escaped by the loss of their lives legal punishment. It must, nevertheless, be acknowledged that their conduct had the justification of general practice in the district.

In some parts of the country mining appears to be losing if it has not altogether lost its former prestige. In former times men were compelled to hole and cut the coal, and get it down afterwards with the hammer and wedge. I have not seen a hammer and wedge used in a mine for some time. They are now things of the past. Gunpowder has been instituted as a substitute, and it is now used more or less in most mines. Whether this is done on the score of economy, or the men prefer the less laborious system, is uncertain; at many places, however, they have the control. When mines were being worked at shallow depths the use of gunpowder was less objectionable than now. At an increased depth there is an increase of the issue of gas, and at 800 yards deep blasting is found to be altogether impracticable. It is argued, and undoubtedly upon good premises, that if there is no gas there can be no explosion, and therefore it is safe to blast. But gas will lie in places ventilation cannot always reach, and the fact of a shot producing great flame, the effect of which in places where the heat is excessive and the mine dusty has never been thoroughly examined. It is however manifest that in such places blasting should be strictly prohibited. This is the opinion of the men also, but in some parts of the district the coal cannot be got without the use of gunpowder, and this is the case in those mines the produce of which is of the least value, and machinery has not yet found us a substitute which is practicable to operate.

Preparations for good ventilation have now been made at most mines in the district; but the system of causing an adequate current to flow through every working place is not generally practised. I sometimes find the cold enough to starve the men to death near the down-cast pit on the inbye aircourse, and the heat in the working places so great as to be unbearable. At other times I have found all the air in the mine flowing in one current, and too much in quantity for the men to bear. This encourages them to seek relief by opening doors and brattice to keep the wind off them; and I frequently find places being exhausted alongside of a goaf with a good current of air passing close by, but not the least quantity reaching where the man works. These things show most clearly the incapacity of the management, and mark the class of men who permit them

to exist. I find the management of mines too often left entirely to underlookers, who may be quite equal to the discharge of their own laborious duties, but altogether unfit for all things. That proper persons should in all mines be employed to manage or view, and be compelled to go regularly through the workings, there can now be no doubt, and owners should well consider this matter without being enforced. It is manifest that unless competent persons of acknowledged ability be employed, serious casualties will from time to time occur, and equally clear that although such men might not prevent them altogether, they would lessen their number. It is scarcely right to ask Government to do that which persons can do for themselves, but until they are compelled many will neglect to do it. It can hardly be expected that the present staff of inspectors can inspect and regulate all things. 100 accidents a year will occupy 100 days of the inspector's time at the least; then, again, to examine all workings would take years of uninterrupted labour. With so many painful casualties before me, which if an inspector had only been expected might not have occurred, I am of opinion that if more inspection be considered necessary and desirable, each inspector should have a few assistants, and that they should be young men of education and promise capable of discovering any breach of law; that they should be distributed over and located in the mining districts, where they could obtain information from the men of the state of the mines, and communicate all important matters to the inspectors. Such appointments need not be a great charge on the Treasury, and by their good conduct they should be considered eligible for the office of inspector. There are mines through which a man advanced in years would not be able to travel. In inspecting such mines young men would be of great service. Then, again, I have never heard of a mine being dangerous until a casualty transpires, and it is only rarely that any communication of danger reaches me from any quarter. I have always to look for it myself. That much mischief is done by the irregular working of mines, which sooner or later produces fatal results, all must admit. This was properly stated in the House of Commons by Mr. Lancaster on the second reading of the new inspection bill. Mines are taken upon lease at high royalties, and subject to very large fixed rents payable before the mine can be properly opened. This drives the lessees to work the coal for immediate returns, by which damages to the pit and roads to such an extent are frequently the result that they become a continual source of danger. I think proper plans of lessees proposed undertaking should be submitted and approved at the outset or before operations begin. If the workings of a mine have been badly set out and unskillfully conducted, the best supervision will fail to prevent casualties. Success, therefore, mainly depends on the scheme being first well considered at the beginning, and carefully carried out afterwards.

I can produce no better proof that lives are lost almost daily through inefficient management and carelessness of the men than that they happen in mines in which such disasters ought never to occur. They are not so frequent in those mines in which the risk from firedamp, bad roof, and many other obstacles is more conspicuous, in addition to their lying at an extreme depth, where the atmosphere becomes intensely heated.

The heat of the Arley or lower mine in the middle coal-field is greater than that of any other mine in the coal-field. On being recovered at the depth of 810 yards at the Rose Bridge Colliery, the thermometer stood at 93° in a confined place. It is hardly to be supposed that the heat would increase much below this point, while there is strong evidence to show it would be very much reduced on approaching the grit measures below. At one fourth the depth of any other mine, the heat of the Arley mine is by far the greatest. As the trias and permian measures produce little or no heat, but are generally cold and sometimes wet, it seems practicable to recover the coal even at the depth of 1,200 or 1,500 yards under trias and permian deposits.

Although much has been done for the education of boys of tender years, that of girls is still unsatisfactory. The Act for them makes no provisions. This may be an oversight; but as girls are extensively employed above ground, it should and may be easily rectified. It will, I fear, be an act of injustice to prohibit boys working below ground under the age of 12 years. They may by the time they arrive at the age of 10 years acquire sufficient learning to enable them by attending school a few hours a week for some time afterwards to obtain a good education. The opportunity of doing so did not exist a few years ago, but the provisions for that object are now nearly ample. To keep young persons from work till they are 12 years of age will, I fear, create an objection to labour which through life they may never be able to overcome. It would drive them from mining to seek other occupations. At that age many will never be able to work in thin mines of 14 or 16 inches thick. In Belgium both boys and girls are permitted to work below ground at the age of 10 years, provided only they are able to read and

write. At a colliery near Mons I saw a great number of both boys and girls of from 10 to 12 years of age going down the pit, and I felt a strong admiration then of the laws of my own country, which so wisely prohibited the latter.

It is a great mistake on the part of persons speaking on platforms to the working population, to attempt to flatter their vanity by telling them of wrongs of imaginary evils and oppression, instead of giving them wholesome lessons of instruction, of encouraging them to be honest, industrious, and careful. They are on all occasions crammed with complaints of legislative neglect; and no class suffer so much from this source of discontent as miners. Among their leaders there are some very good men, and a great many not sufficiently wise to be always followed. If they had the welfare of the men at heart they would on every occasion impress upon their minds the necessity of strictly observing all laws, both moral and legal, whether acknowledged or established. It is unnecessary to ask the question, when past events give the answer; but is this ever done.

I may, in conclusion, just remind colliery owners of that which they can hardly fail to have noticed, that the public have become very much dissatisfied with colliery accidents, and that the time is fast approaching when it will urge Parliament to strict legislation. I wish, therefore, to advise them to do all they can to lessen the loss of life; to employ competent men; to arrange the ventilation, and to see that in all places there is an adequate current of air; that the use of gunpowder where practicable be prohibited; that as few doors as possible be used in the mine; that the air be not carried too far by means of brattice; that the roads and working places be properly propped and spragged; that, before shots are fired, the places be well examined, and those places also on every side of them; and that proper persons of acknowledged skill and sobriety be employed as officers below ground. If these recommendations have proper attention, I have no doubt there will be a great diminution of accidents, far more than by the services of a great number of additional inspectors.

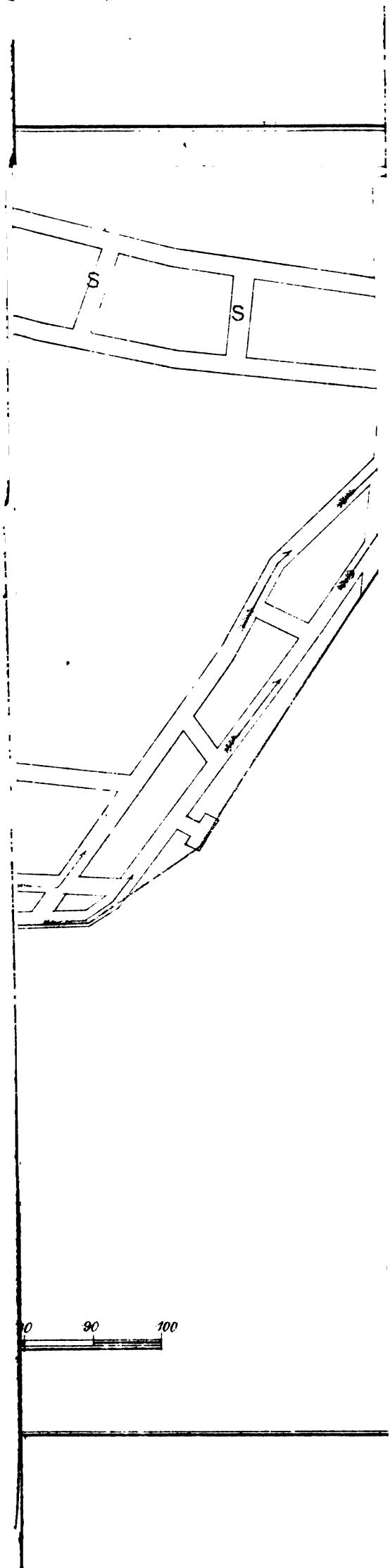
The following pages contain a more particular account of the casualties to which they refer. The safety of the mines at Park Lane, Haydock, and Low Hall depended altogether on the underlookers, firemen, and shot lighters most carefully discharging their respective duties; ventilation equal to the requirements of those places had been provided by the owners thereof. In the two first-mentioned places the firemen were killed, and in the last the shot lighter.

Provided there may be a great current of air in some parts of the mine, and no air at all in others, the Act is in such cases violated. It seems to provide for ventilation in all places, whether gas does or does not appear.

Loss of life from explosions of gas;—High Brooks Colliery, Wigan.

On the 1st of April an explosion, which caused the death of 37 persons, happened in the Orrell four-feet mine at High Brooks Colliery, Park Lane, near Wigan. Although this mine had the character of emitting gas, none had been seen therein, the area then opened out being very small. The return air from another mine called Orrell five-feet, of still smaller extent, was being passed through the workings of the four-feet mine. At the point where it entered the four-feet mine it had no appearance of being vitiated in the slightest degree, and by subsequent examinations and experiments it seemed adequate, under ordinary circumstances, to keep the working places clear of gas, provided other regulations were attended to according to the established custom.

At the place marked A. on the plan hereunto annexed I found a shot-hole improperly drilled beyond the top of the coal and into the roof of the mine; from that cause, combined, perhaps, with that of not having been properly charged, it had evidently blown out without breaking down the coal. Shots which blow out like this produce great flame, which extends a long distance from the shot-hole. The destructive power of gunpowder is, however, now so well known, that in the absence of inflammable gas it would not be difficult to estimate the amount of personal injury likely to be sustained from the number of persons employed in that particular working place, which seldom exceeds four in number, and, as the product of exploded gunpowder dissipates so rapidly, that it would scarcely produce suffocation in the adjoining places. The coal on the sides of the roads and the roof of the mine were burned and charred for a long distance, much beyond that which gunpowder could possibly produce, notwithstanding a number of exploded powder cans lay scattered in all directions. Under the circumstances, it appeared to me very clear that a quantity of explosive gas had accumulated in one of the working places next to that



in which the shot had been fired, and that it had been ignited by the flame thereof. If the shot had not blown out, but done its duty properly, and broken down the coal, the flame might not have reached the gas, and it would no doubt have been subsequently removed without any personal injury. A fireman was regularly employed there to make a daily inspection of all the workings, and remove gas, if he found any, before a shot was fired, so that this casualty should not have occurred. He must, therefore, either negligently or inadvertently have omitted to examine all the places in that particular part of the mine, especially that in which the gas was lying. The quantity of air used for the ventilation of these working places was about 5,000 cubic feet per minute; but an additional quantity was allowed to scale through the old roads, and return to the upcast pit, which might have been used in case of need, inasmuch as it rendered no practical service. It was a mistake to take the return air from one mine, and use it again to ventilate another mine in which men were employed opening out, and it is equally erroneous in practice to guide the air through a number of working places within a few yards of each other by means of brattice cloth. The gas and filth gathered in one place is carried by such an arrangement into another, until the last, as it were, becomes a cesspool. If the places were further apart, the vitiated air, coming out of one place, would before reaching the next be so dashed about in passing along the main road as to become diluted before entering another, that the difference between it and pure fresh air would scarcely be noticed. It is also desirable that for inexperienced men shot-holes should be set out, and the shots charged and fired, and that the quantity of gunpowder in their possession should be limited. As all this is now being done at this colliery; there is reason to hope for a better result. The coroner's inquiry was long and painstaking, but nothing could be obtained in evidence that could justify the jury in attaching blame to any surviving person. Various theories were hazarded by several witnesses, attempting to trace the effect back to the cause; one of which is, perhaps, deserving of notice, from the originality of the idea, which was in effect that the blown-out shot had disturbed and ignited the coal dust; but that could not have caused a loud report, and produced a large quantity of after damp. Still the dust lies so thick upon the floor of the workings, and is so easily ignited in this mine, which is the lowest seam in the middle coal-field, and lies just above ganister measures, that, irrespective of an explosion, the product of the burning coal would cause death; but, on the flame reaching a bare place, and there was little or no dust for some distance from the pit, the burning would cease altogether. The current of air had, I found, been borne generally to the extremity of the workings by a cloth door at the point C. on the plan. If that door happened to be down, or allowed too much air to scale through at that place, the workings from B. to C. would become unventilated, and gas accumulate therein. On the door being restored, the air would resume its usual course, and drive away the gas into the other workings beyond. This seems the only way of accounting for this casualty. Although it is the duty of the fireman chiefly to see that the ventilation is properly maintained, it should be borne in mind that a mine may be viewed in the light of an unlimited number of small workshops, each containing from one to perhaps three or four hands, each of whom should render a helping hand towards their own protection, and if a door happened to be down some of them would see it, some time, perhaps, before the fireman, and they ought to have adjusted it at once. Since 1866, when a previous serious explosion happened in this mine, the works have been in a great measure suspended; I thought entirely so. On that occasion there were to be seen indications of a sudden outburst of gas having taken place, and the mine generally has a well-known treacherous character, and demands more than ordinary care in the management. The man, Leyland, whose shot blew out, and the fireman Gorton, who fired it, together with 35 others, perished by the catastrophe, so that none of the men in that part of the mine at the time survived to give any information of the state of the workings previous to the casualty. By lessening the scale through the old roads, nearly double the quantity of air might have been thrown through the workings. After the explosion, I could only find a little short of 5,000 feet a minute going through, while the actual quantity of air in the mine exceeded 8,000 cubic feet per minute. In this mine, and for that number of men employed, there can be no security for life with less than 16,000 cubic feet, although with 4,000 feet not a trace of gas could be found, nor an emission thereof seen or heard.

Mains Colliery, Ashton, Wigan.

At the Mains Colliery on the 6th of April, in Ashton, near Wigan, Henry Shipley, a collier, died from the effects of an explosion which he inadvertently caused by going

into his working place with a naked light, although he had a safety lamp with him at the time. He had cut through, into an old and suspended place, to liberate a body of gas, which in his temporary absence issued through the perforation he had previously made. On returning he ignited it with his naked light.

Plaskynaston Colliery, near Ruabon.

On the 11th April, Edward Edwards died from the effect of an explosion in the Plaskynaston Colliery, near Ruabon, in Denbighshire.

Vron Colliery, Wrexham.

On the 13th April, at Vren Colliery, near Wrexham, James Thomas, a horse keeper below ground, was burned by an explosion caused by igniting some gas which lay in a hole in the roof of or "top" of a tunnel. He had been frequently told not to go there without a safety lamp. So on the day in question he was going along with a safety lamp in one hand and a naked light in the other. He fired the gas which caused his death, and thus he sacrificed his life as a penalty for his disobedience. It was not a customary road to travel.

Newtown Colliery, Wigan.

At Newtown Colliery, near Wigan, on the 17th April, James Legh, a collier, was killed by an explosion of fire-damp or gunpowder, by a blown-out shot in the Pemberton four-feet mine. It was said to have been caused by the shot alone; but I found upon inspecting the place that the brattice was not near enough to bear the wind up to the working face.

Westminster Colliery, Wrexham.

On the 20th June an explosion happened at the Westminster Colliery, near Wrexham, which caused the death of John Davies, a collier, 39 years of age. Deceased, along with several others, was working in the main coal with an uncovered light, when a fall in the goaf drove a quantity of gas on to his light, at which it ignited and exploded.

Haydock Colliery, St. Helens.

The most serious explosion of the year occurred on the 21st July in the nine-feet mine at the Haydock Colliery, near St. Helens. This casualty caused the death of 59 persons. It is a remarkable instance of the uncertainty of life in a coal mine, on account of the limited number of working places, and of the men employed therein; while it shows, after mature deliberation, the absolute necessity of the best engineering ability and judgment in laying out underground operations in a coal mine. The works under consideration are a little more than 800 feet below the surface. They are opened out from a tunnel leading to another mine called the Main Delf, along which, and through the aforesaid opening, air is admitted to ventilate the same, which, after passing through the workings of the nine-feet mine by two splits of 8,000 cubic feet per minute each, up the brows marked A and B on the plan hereunto annexed, it escaped by an outlet at the point E, after having flowed to the extreme ends of the workings at C and D into the Main Delf mine, which lies about 17 yards in the order of geological position above the nine-feet mine, and from thence, after passing through one or two working places, to the upcast pit. The nine-feet mine is known to be one of the most fiery mines of a district in which explosive gas prevails extensively throughout. A great many scientific witnesses were examined at the inquest, and they were all of opinion that an explosion of gas had happened in one of the two upbrows called Pilkington's Brow, marked by the letter A on the plan; that it had been caused by a fall of roof or fall of timber which had been put up for protection, or by the former, causing the latter liberating a quantity of gas, which must have been lying in a hole above the timber framework; but they were not so unanimous as to the means by which it was ignited. There certainly were strong indications of a shot-hole having been charged and blown out up the brow marked A, known as Pilkington's Brow, but as John Billinge, the shot-lighter, and Yates, the fireman, were found so far away they could not have ignited it. One of the men must have done so, contrary to orders, and before the places were examined by a competent person. A lamp also was found without the lower part of the gauze. It is manifest that if gas were liberated in the manner already stated it might ignite at this lamp; but it is just as likely that before the explosion the lamp

might be perfect. It is also clear to the most ordinary mind that it would be highly improper to find shots in places wherein it is unsafe to take an uncovered light. If the hole above the timber in Pilkington's Brow was as stated 600 or 800 cubic feet in capacity, it might contain gas, although it is scarcely probable. It should have been ventilated and daily inspected; but there was no evidence to show that this had been done. As there were large falls of roof in all the four upbrows, the same conclusion might be drawn from any of them. Large quantities of blasting powder appeared to have been taken down by the men, and used somewhat profusely. It was the custom to ignite two shots at a time, so that if one shot exploded a little before the other, and liberated gas, it might be exploded by the second shot. It may be traced on the plan before referred to, how the course of the air for ventilating this mine was guided. The whole quantity amounted to 16,000 cubic feet per minute. In addition to the seven working places it had to keep clear of gas, it had to sweep along the edge of several small goafs before it left the mine. The first intakes were borne into the upbrows by means of double doors at F, G, and H. Beyond these doors it was or should have been carried close to the working faces by means of brattice cloth fixed four feet from the side from every cut through between one road and another. If, therefore, the doors at F were left open, no air would go up the brow B. If the doors at G were left open, the ventilation would shut off from the brow A, and in like manner it would be disarranged by leaving open the doors at H. In the upbrow marked by the letter B, the air was being conducted by means of brattice to the face of the work 50 yards beyond the last cut through into the adjoining upbrow, and the coal from the working last mentioned was, brought through another opening, 100 yards from the top or face of the work, through which the air was prevented from returning by means of a hanging sheet of brattice cloth locally termed a cloth door. In this upbrow I found traces of the explosion quite as strong as in any other part of the mine, while in this there were marks showing its direction as plain as the handwriting on the wall, not to be seen in others. I had some difficulty in reconciling the evidence in all things. While on some points they were unanimous, particularly as to the management, which could not fairly be doubted, the arrangements, and the source and cause of the casualty, which were questions on which differences of opinion arose. It was manifest to me that the upbrow marked B had become foul; that gas had accumulated there, and by some means been ignited. Whether this had been caused by the doors herein-before mentioned having been open, or the cloth door in the brow being down, or from whatever cause, can never be ascertained; but from the direction in which the burning coal dust had been driven by the blast into the ends and backs or cracks in the living coal, the way in which the boxes were blown at the foot of and in both upbrows, were satisfactory proofs in support of this view. Some time previously I made a most careful inspection of every place in this colliery, in consequence of a letter I received from a delegate of the colliers. On that occasion I could find no gas, and I ascertained that the quantity of air going through the workings was about 100,000 cubic feet per minute for the workings of this colliery. I thought, and still think, 16,000 feet an ample supply, and that without proper care 20 times that quantity would not have afforded any more protection. The owners of the mine, Messrs. Evans, never stint the outlay; anything necessary for protection would have been done had they only known of it in time. The fireman, Yates, was found at the foot of the upbrow B, as if just coming away from it after an inspection. He was then alive, but only survived a few days. It is only fair to state that gas may have come off suddenly, and overpowered the ventilation; but if it occurred from any other cause than that, the persons then employed below ground held their lives in their own hands. It may be said that to conduct air from one mine to another, and to allow the ventilation to depend upon doors that have to be constantly opened for persons to go through, is a mistake, but such is the character of mining, that the best considered plans are invariably frustrated by the unknown and variable ground frequently met with in opening a mine; nothing better could have been done without sinking another pit, and as the six-feet or Main Delf was far exhausted that may have been deemed unnecessary.

Low Hall Colliery, Wigan.

An explosion of fire-damp happened at the Low Hall Colliery on the 15th of November, which, besides killing 27 persons, set the mine on fire. In order to extinguish the fire the mine was inundated. This was easily accomplished by means of the Liverpool Waterworks, the pipes of which are within a few yards of the pit, but it prolonged the inquiry. The mine took a long time to unwater, and when an entry could be made it was found to have caused numerous and extensive falls of roof. Weeks

elapsed before all the bodies could be recovered. In the meantime the fire, which was still existing, had to be walled off, and all the workings were full of explosive gas, and very difficult to remove. Up to the time of writing this report, I have not been able, after many separate inspections, to ascertain the amount of ventilation employed previous to the explosion, inasmuch as the furnace has not been relighted; but from the small extent of openings, the size of the roads, and natural ventilation, which then kept the places perfectly clear of gas, and in a very satisfactory state, I easily arrived at the conclusion that it must have been more than ample; and this opinion was corroborated by all the surviving men who had worked there. The seat of the fire, the course of the air, and the place in which a shot had been blown out, are marked on the plan annexed, together with all the openings in the mine at the time. Of all the mines of my district I should have least suspected an explosion in this; with workings on a small scale, and a limited number of hands, together with strong natural ventilation, the casualty had more the appearance of mystery than something real though melancholy. In two of the eight places marked on the plan may be easily discovered the blown-out shot-hole and the seat of the fire. From the latter, in which the persons were not working at the time, it is supposed gas was being carried by the current of air in the direction of the former, and the gas was ignited by the flame thereof. Whether the gas had been an accumulation through neglect, or a sudden and unexpected outburst, I have not yet been able to ascertain, as the place is still walled in, and the fire in existence. From the evidence, however, of the fireman, corroborated by many of the workmen, all the places were said to have been carefully examined only a short time previous to the explosion, and pronounced clear of gas and perfectly safe. Shortly after this the shot-lighter ignited several shots, and subsequently the shot that blew out, which without doubt ignited the gas. He was lying dead near the place, apparently as if retreating from it for safety. There is generally unmistakeable evidence after these casualties whereby a tolerably correct judgment may be given of their origin and direct cause, and this was no exception to the rule. If the shot-lighter or a fireman had carefully examined some of the working places adjoining the one in which the fatal shot blew out, in all probability the issue or accumulation of gas would have been discovered, and this serious calamity avoided. He was not in the habit of doing so, and it did not appear that he was ever required to make such an examination; neither was it customary where other explosions have happened. The colliery was managed by one of the directors of the company above ground, and by an underlooker of more than ordinary ability below. In all mines, particularly those which give off gas, the supervision of a man of superior standing and judgment is indispensable, not only for the purpose of avoiding errors and regulating the scale of labour, but also for the purpose of maintaining discipline among the work-people, which the law should compel.

The coroner's jury returned a verdict according to the facts herein stated, and acquitted all connected with the works of blame. It consisted of some of the best men in the neighbourhood, and a few working colliers, one of whom worked in the No. 4 level of the mine in question.

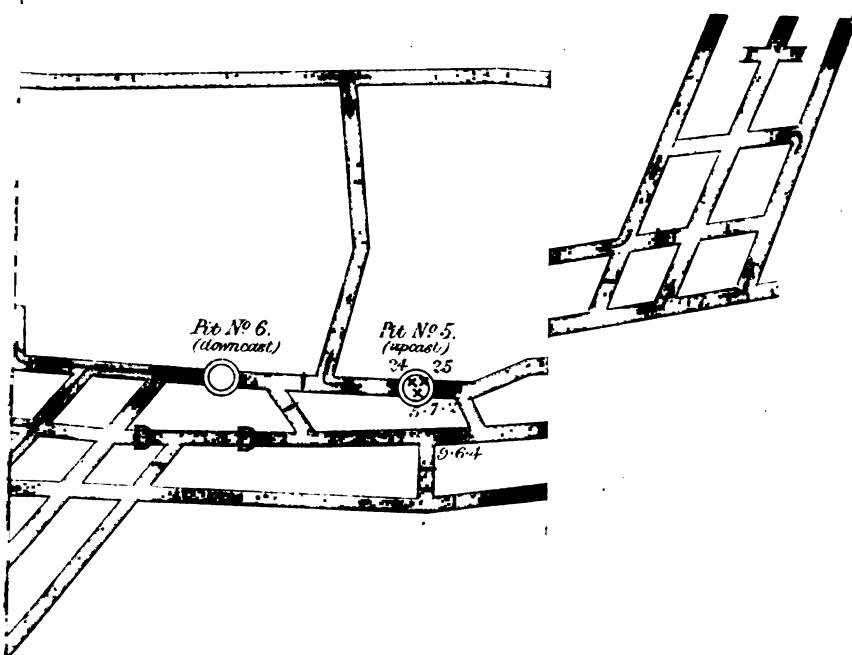
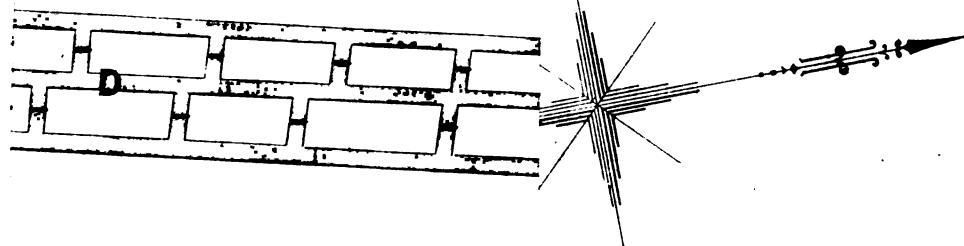
Loss of Life from falls of Roof and falls of Coal.

For the year 1868 I had the painful duty of reporting the death of 62 persons, caused by 58 falls of roof and falls of coal. In the year 1869, now under consideration, 45 persons have been killed by 43 falls, which shows a diminution of 15 falls and 17 deaths. They have happened from various causes, and in many cases under very peculiar circumstances; from unseen slips, which in many places are numerous, and at which the roof gives no warning before it falls; from the breaking up of the roof and floor; from pressure produced by the goaf; from neglecting to set a sufficient support of props and sprags, and from other causes against which human foresight could not be expected to provide. Great neglect has also been manifested in dispensing with or disregarding the established practice of drawing or taking out props, by simply knocking them down, regardless of what may follow. There has been no stint of timber; in all cases the supply has been ample, and in this district the duty of fixing an adequate quantity for protection is incumbent upon the men themselves. The special rules provide that the underground officers shall see that the men do fix a sufficient quantity of props. Their orders are not always obeyed at the moment, but often deferred too long. In following out by inspection and inquiry the cause of death of these 45 persons, I found no blame could be brought home to the owners or agents of the mines in which they happened. I think, therefore, you will be of opinion that the deceased persons were responsible for their own deaths, or that their lives were lost under circumstances over which they had no control.

List of Bod

* 1	John	O
2	Richard	H
3	William	S
4	Henry	H
5	Peter	S
6	Robert	H
7	James	H
8	William	G
9	Richard	A
10	William	H
11	William	H
12	Albert	L
13	John	H
14	Henry	H
15	William	H
16	Peter	H
17	George	H
18	Peter	D
19	James	S
20	Luke	A
21	Peter	H
22	John	H
23	Thomas	A
24	Samuel	S
25	John	B

* In addition to these, there are 2 bodies on the Plan corresponding with 1 & 2, where the respective bodies were so.



Peter Higson
Swindon Manchester

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Loss of Life in Shafts.

On the 9th of January two men, Thomas Burrows and Thomas Whaley, both engine tenters, fell into the pit at the Rainford Colliery, and were killed. On the previous night, the mine having taken fire, a scaffold was put over the mouth of the pit, and covered with debris, and steam turned in below to extinguish the fire. In the middle of the night steam appeared to come through the scaffold, which the deceased attempted to stop, but on then getting on the scaffold for that purpose it gave way, and they fell to the bottom of the pit. The scaffold, which from all accounts was properly fixed, had been destroyed by the heat of the steam.

On the 20th of January a boy fell out of the cage, evidently while ascending a pit at the Peasley Cross Colliery, Saint Helen's.

January 22nd. Thomas Evans, a sinker and metal man at the Frood Colliery near Wrexham, having ignited a shot in a tunnel near the bottom of the pit, signalled to the engine man to wind him up. In hurrying to get into the cage, he stumbled, and before he could recover himself and get properly in, the cage began to ascend. He was caught when only part way on between the cage and the framework of the guide rods, and died of the injuries he received.

January 28th. John Lawson, sinker, was killed in the new sinking pit at the Barnfurlong Colliery near Wigan, by something falling from the side or top; what it was or where it came from could not be ascertained.

February 6th. A few days ago the body of J. Brimelow was recovered from the bottom of a pit at the Park Lane Colliery, where it had lain for months, and could not be recovered in consequence of the mine being on fire. For the purpose of putting out the fire, a scaffold had been put over the mouth of the pit, and high-pressure steam turned on below it. The steam, as at Rainford, seems to have weakened the scaffold, and on deceased seeing the steam escape he got on to the scaffold to prevent it; the scaffold gave way, and he fell to the bottom, and was killed by the fall.

March 2nd. The deceased on this day was standing at the bottom of a drop pit at Haydock Colliery, when the cage descended upon him, and caused his death.

March 17th. Samuel Roberts, collier, fell out of the cage at Hafod Colliery, while going down the pit. No other cause could be assigned for this occurrence than that of deceased having had a fit or that he fell accidentally.

On the 29th of March, William Cunliffe, a fireman occasionally, and day wage man, was employed to attend a furnace below ground in the night. Was observed by the engine tenter on his arrival to smell very much of drink. On being told of this, he confessed that he had taken a glass or two. The head fireman thought he was scarcely drunk. In the morning he was found dead at the bottom of the pit, having fallen from a mouthing above. The furnace was out which he had to feed, so that the accident must have happened soon after he got down the pit. He would have to pass through a fence on his way to the pit, which would remind him of his position. His faculties must have been stupefied by drink.

March 24th, at the Mostyn Colliery near Holywell, an old collier, John Lewis, inadvertently walked into the pit at a mouthing, and fell to the bottom, a depth of 30 yards. He was taken up quite dead.

May 13. The crank of the winding engine at the Worthington Colliery broke while the sinkers were at the bottom of the pit; the tub and rope fell down the pit upon them, and caused the death of Nathan Mather. The neck of the crank was manifestly too weak for the size of the cylinders, and the load put upon which had from natural and unavoidable causes exceeded what was originally intended. The machine consisted of two cylinders worked by high-pressure steam, with double gearing throughout, so that if the crank had not been a faulty casting it should have done the work with safety.

June 14. The hooker-on at the High Brooks Colliery, William Eden, fell inadvertently from the mouthing of the 5-feet mine to the bottom of the pit, and was killed by the fall. He had gone inside the fence to signal the engine tenter. He had been in the habit for years of attending to signals, and giving them, and therefore knew the place well.

September 1st. At the Brymbo Colliery near Wrexham, a boy, 13 years of age, was killed by the cage descending upon him, as, contrary to the rules of the colliery, he stood in the eye of the pit.

September 1st. Nathan Mills, horse keeper at the Ravenhead Colliery, received injuries on the top of the pit while getting out of the cage. It is supposed, being delicate, that he had suffered from the heat and smoke of the pit, which upon inspection I found to be not unbearable.

September 7th. John Mitton, a sinker, and an unsteady man, fell into and down the sinking pit at the Downall Green New Colliery, while attempting to get into the tub, to go down the pit, as it was moving, and contrary to the bankman's expressed command not to do so.

September 14. The banksman at the Waterloo Colliery, Ruabon, was pushing a tub into the cage ; went to the contrary side of the pit, and, being no fence there, he run it into the pit and fell down with it.

October 20th. Thomas Menzies, a collier at Haydock Colliery, on arriving at the pit a late hour in the morning, the engine man refused to let him down ; he got into the cage unseen, and being lowered a few yards the engine stopped for some time. As deceased was found dead at the bottom of the pit, it is supposed he attempted to slide down the wire guide, and that in doing so he fell off.

November 4th. Adam Ellison, hooker-on, was killed in the Taylor Pit of the Standish Lower Ground Colliery, Wigan, by a piece of coal falling off the ascending cage.

November 29th. Thomas Hanmer, furnace man, was killed by falling down the pit he had just been ascending. He had been down the pit all night, and on landing on the top, the morning being dark, he turned the wrong way about, and walked into the pit.

December 6th. Henry Bradley was this day killed in the Waterloo Pit, Ruabon, by falling out of the cage while ascending. The deceased, the manager also of the mine, and the blacksmith, were coming up the up-cast pit in consequence of the down-cast pit being disarranged ; as the pit was very hot, the engine man was told to wind fast ; he did, and the cage caught against a horse tree, and threw them out ; the manager went down to the bottom, 160 yards, by the rope guide ; the smith held on by a horse tree till recovered, but the deceased fell to the bottom, and was killed thereby.

Loss of Life from Miscellaneous Causes below Ground.

January 8th. The heat of the furnace evidently ignited the unworked coal adjoining it in the Rainford Colliery. The mine was exhausted, with the exception of what was left to support the pits which were being sunk to the next seam below. The deceased and 7 persons were preparing to put out the fire, by throwing water upon it by means of water pipes and hose. When the apparatus was nearly completed, and the deceased were expecting shortly to commence operations, the current suddenly turned, and brought the flame of the fire upon them as they sat close by, which burned them so severely that they died of the injuries they received.

Loss of Life from blown-out Shots and Gunpowder :—At Wynnstay Colliery, Ruabon.

On the 13th March a shot, the hole of which was injudiciously made, and, perhaps, as unskillfully charged, in the main coal mine of the Wynnstay Colliery, Ruabon, blew out, and the flame, which, under such circumstances, is generally large, burned four men, who had not retired sufficiently far, that they died of the injuries they received. This casualty created much excitement ; and, although some persons found great fault with the surgeon, no blame, I think, rested with him ; the unskillful preparing of the shot was the primary and sole cause.

At Wynn Hall Colliery, Ruabon.

At the Wynn Hall Colliery, some gunpowder was accidentally exploded, which caused the death of a collier named John Davies, who was foolishly carrying it in his hand, together with an uncovered light. It was believed that he dropped the candle into the vessel containing the powder.

Ewloe Hall Colliery, Buckley, Mold.

On May 3rd, about 23 lbs. of gunpowder was ignited in the workings of the main coal mine at Ewloe Hall Colliery, in Buckley, near Mold. John Dodd and William Edwards are supposed to have ignited the powder while attempting to open the cask ; it exploded and caused their death. There could have been no gas in the mine, as no after damp and no other damage was done. One of the colliers, a charter master, also sent the powder down the pit the night before the casualty, unknown to the underlooker. This is an old practice, which I had a strong impression was abandoned altogether.

Douglas Bank Colliery, Wigan.

On the 23rd June Hugh Evans was killed in a tunnel he was driving in the Douglas Bank Colliery, by being hit by a stone blown down by a shot. After igniting the fuze he did not retire sufficiently far away.

Loss of Life from Accidents above Ground.

In 1868, thirteen accidents happened above ground, causing the deaths of thirteen persons. In 1868 there have been nine fatal accidents and nine deaths, or less by four than in the preceding year. Six of the number happened on the branch railways of the different collieries, deceased being run over and crushed between the buffers of the coal trucks. One died from being hurt by a piece of timber falling upon him, one by falling off the pit bank on to the railway underneath, and one poor little fellow was drawn by the rope of an incline engine on to drum. All these accidents were of a class which showed negligence or inadvertence on the part of the sufferers, and no further provisions for safety were necessary or even practicable.

To none of the mines in which the accidents herein-before mentioned has my attention been called, either verbally or by letter; and during the whole year I have only received three letters informing me of mines being dangerous, and of that number only one mine was really so. More inspection than I am able to make might have worked up discipline, though I cannot say it would have prevented a single explosion, unless an inspector had been present at the time of the casualty, or shortly before it happened. Notwithstanding what has been said to the contrary, scores of mines have been inspected during the year wherein no accident has happened, or to which my attention has been directed. The cause of every casualty has been carefully investigated at the coroner's inquiry, and by thorough inspection of the mines in question. My time has been fully occupied out of doors, and my indoor work has been done nearly altogether beyond working hours, in the hope of satisfying every class. It seems, however, my efforts to do so have not been completely successful. As the state of a mine may become so quickly disarranged, and frequently as soon put right, it would in many instances be an act of injustice to publish the result of every inspection, which some people would like to be done.

I have, &c.,

(Signed) PETER HIGSON,

Inspector of Mines.

The Right Hon. H. A. Bruce, M.P.,
Secretary of State.

REPORTS OF INSPECTORS OF MINES.

List of the FATAL COLLERY ACCIDENTS, and LOSS OF LIFE arising therefrom, in the SOUTH-WEST LANCASHIRE and NORTH WALES DISTRICT, during the Year ending 31st December 1869.

Date.	Name of Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.			Number of Lives Lost.	
							Explosion.	Falls of Roof.	In Sheds.	Miscellaneous.	
1869.											
Jan. 8	1 Rainford	St. Helens	Rainford Colliery Co.	Mic. Brown	-	-	36	The mine having become ignited by the heat of the furnace, the deceased persons were trying to extinguish it with water when the flame backed upon them and burned them so severely that they died from the effects thereof			1
" 9	" Ditto	Ditto	Ditto	Thos. Bullen	-	-	34	- - - - -			1
" 10	" Ditto	Ditto	Ditto	Wm. Glover	-	-	40	- - - - -			1
" 11	" Ditto	Ditto	Ditto	Sam'l. Rice	-	-	28	- - - - -			1
" 12	" Ditto	Ditto	Ditto	Jno. Smith	-	-	57	- - - - -			1
" 13	" Ditto	Ditto	Ditto	Hy. Birchall	-	-	49	- - - - -			1
" 14	" Ditto	Ditto	Ditto	Edwd. Turner	-	-	26	- - - - -			1
" 15	" Ditto	Ditto	Ditto	Sankey Brook Colliery Co.	Day wage man	-	Fall of roof	- - - - -			1
" 16	2 Sankey Brook	Ditto	Ditto	Rainford Colliery Co.	Day wage man	-	Falling into the pit from surface	- - - - -			1
" 17	3 Rainford	Ditto	Ditto	Ditto	Engineeman	26	Ditto	- - - - -			1
" 18	4 Ditto	Ditto	Ditto	Samuel Stock	Ditto	20	Fall of roof	- - - - -			1
" 19	5 Blackley Hurst	Ditto	Ditto	Messrs. Bowine and Co.	Day wage man	57	Falling out of cage while ascending the pit.	- - - - -			1
" 20	6 Peasley Cross	Ditto	Ditto	Jno. Brookfield	Drawer	15	Fall of coal	- - - - -			1
" 21	7 Flint Marsh	Flint	Flint Marsh Colliery Co.	Ed. Jones	Collier	45	Injuries received while getting into the cage at the bottom of the pit after igniting a shot.	- - - - -			1
" 22	8 Frood	Wrexham	Sparrow and Poole	Thos. Evans	Sinker	37	Doubtful.	- - - - -			1
" 23	9 Bumforlong	Platt Bridge, Wigan.	Cross, Tetley and Co.	Jno. Lawson	Ditto	50	Something falling from the side ;	- - - - -			1
" 24	10 Leeswood	Leeswood, Mold	Leeswood Cannel and Gas Coal Co.	Timy. M'Manus	Drawer	19	Being crushed between the tub and the side.	- - - - -			1
" 25	11 Victoria	Rainford, St. Helens.	Victoria Colliery Co.	Robt. Charlesworth	Ditto	19	Fall of coal	- - - - -			1
" 26	12 Park Lane	Wigan	Mercer and Evans	J. Burmelow	-	-	Falling into the pit from the surface	- - - - -			1
" 27	13 Hindley	Hindley	Wigan Coal and Iron Co.	Thos. Parr	Labourer	27	Suffocation in explosive gas	- - - - -			1
" 28	14 Winstanley	Wigan	Meyrick Banks	Geo. Birchall	Drawer	18	Fall of roof	- - - - -			1
" 29	15 Haydock	St. Helens	Richd. Evans and Sons	Jno. Fimlett	Ditto	15	Fall of coal	- - - - -			1
" 30	16 Hanner	Holywell	Eaton and Elliot	Peter Holland	Collier	28	Ditto	- - - - -			1
Mar. 1	17 Taylor Pit	Wigan	Wigan Coal and Iron Co.	Geo. Walls	Drawer	-	Coal tubs running against him	- - - - -			1
							Carried over	- - - - -			10
								7 6			

List of Fatal Colliery Accidents—continued.

Date.	Name of Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	Number of Lives Lost.			
								Explosion.	falls of Roof.	In Blasts.	Miscellaneous.
1869.											
Mar. 2	18	Haydock	St. Helens	Richd. Evans and Sons	Pat. Galliger	14	Brought forward	—	—	6	10
," 2	19	Ince Hall	Ince	Ince Hall Coal and Cannel Co.	Henry Gregory	—	Cage descending upon him	—	—	1	—
" 5	20	Ditto	Ditto	Ditto	Thos. Worthington	14	Crushed between buffers of wagons	—	—	1	—
" 9	21	Edge Green	Golborne, New-ton-le-Willows.	Richd. Evans and Sons	Peter Sow	—	Run over by a train of full tubs	—	—	1	—
" 11	22	Pemberton	Wigan	Jno. Blundell	Jno. Heaton	42	Fall of roof	—	—	1	—
" 13	23	Wynnstay	Ruabon	New British Iron Co.	Jno. Roberts	16	Burned by a blown out shot in	—	—	1	—
" "	"	Ditto	Ditto	Ditto	Geo. Reynolds	29	the main coal mine	—	—	1	—
" "	"	Ditto	Ditto	Ditto	Jno. Roberts	40	—	—	—	1	—
" "	"	Ditto	Ditto	Ditto	Edwd. Davies	41	—	—	—	1	—
" 17	24	Hafod	Wrexham	Ruabon Coal Co.	Saml. Roberts	27	Falling out of cage while descending	—	—	1	—
" 20	25	Spring	Ince, Wigan	Pearson and Knowles	Math. Bohen	—	Fall of roof in Arley mine	—	—	1	—
" 29	26	Haydock	St. Helens	Richd. Evans and Sons	Wm. Cunliffe	56	Falling from a mouthing part way	—	—	1	—
April 1	27	Douglas Bank	Wigan	Jno. Grant Morris	Jas. Rudd	18	down the pit.	—	—	1	—
" 28	High Brooks	Wigan, Park Lane	Mercer and Evans	Alex. Latham and 36 others.	Drawer	36	Falling on the floor of the mine	—	—	37	—
" 29	Norley	Wigan	Norley Colliery Co.	Isaac Greenhalgh	Colliers	—	An explosion	—	—	—	—
" 6	30	Manis	Wigan, Ashton	Henry Shipley	Ditto	53	Fall of roof in cannel mine	—	—	1	—
" 10	31	Wynn Hall	Ditto	Jno. Davies	Ditto	21	An explosion of gas	—	—	1	—
" 10	32	Low Hall	Ditto	Henry Holden	Ditto	32	An explosion of gunpowder	—	—	1	—
" 11	33	Ditto	Ditto	Jas. Robinson	Ditto	23	Fall of roof in the Wigan 9-foot mine	—	—	1	—
" 19	34	Plaistynaston	Ruabon	Ed. Edwards	Ditto	45	Ditto	—	—	1	—
" 17	35	Vron	Wrexham	Jas. Thomas	Ditto	18	An explosion	—	—	1	—
" 21	36	Newtown	Wigan	Jas. Leigh	Ditto	24	Ditto	—	—	1	—
" 37	Brookside	Mostyn	Holywell	Jno. Lewis	Collier	—	Fell from a mouthing 30 yards	—	—	1	—
					Ditto	64	down the pit.	—	—	1	—
							Run over by a full tub on an over-land plane.	—	—	1	—
							Carried over	—	—	41	12 10 19 1

List of Fatal Colliery Accidents—continued.

Date.	Name of Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.		Number of Lives Lost.
							Explosions.	Falls of Roof.	
No. of Accidents.									
1869.									
April 22	38	Orrell	-	Wigan	-	Frank Grundy	Brought forward	-	41
" 28	39	Crawford	-	Ditto	-	Richd. Hurst	Fall of roof	12	10
" 29	40	Westminster	-	Wrexham	-	Saml. Davies	Ditto	1	19
May 3	41	Ewloe Hall	-	Buckley, Mold	-	Jno. Dodd	Ditto	-	1
" "	42	Ditto	-	Ditto	-	Wm. Edwards	An explosion of 25 lbs. of gunpowder. Whilst tipping a tub	-	1
" "	43	Plaskynaston	-	Ruabon	-	Chrstr. Connock	of coal, the apparatus broke	-	1
" 21	44	Worthington	-	Wigan	-	Nathan Mather	down, and he fell on the railway	-	1
" 27	45	Orrell	-	Near St. Helens	-	Wm. Lee	The crank of winding engine breaking, the bucket fell upon him in	-	1
" 31	46	Aspull	-	Wigan	-	Jas. Farrimonds	the pit.	-	1
June 9	47	Ince Hall	-	Ditto	-	Rich. Hilton	Crushed between railway trucks	-	1
" 14	48	High Brooks	-	Ditto	-	Wm. Hill Branker	above ground.	-	1
" 16	49	Broncoed	-	Mold	-	William Hill Branker	Fall of roof	-	1
" 23	50	Kirkless	-	Mercer and Evans	-	Wigan Coal and Iron Co.	Run over on a surface railway by a	-	1
" 29	51	Douglas Bank	-	Broncoed Coal Co.	-	Mattheu Fairhurst	truck.	-	1
" 29	52	Hanner	-	-	-	Wm. Idden	Crushed between coal tubs below	-	1
" 29	53	Lindsay	-	-	-	Thos. Luke	ground.	-	1
" 30	54	Westminster	-	Wigan	-	Josh. Prescot	An explosion	-	1
" 30	55	Peasley Cross	-	Ditto	-	Hugh Evans	Falling into pit	-	1
" 12	56	St. Helens	-	Ditto	-	John Williams	Run over on a self-acting incline	-	1
" "	"	Ditto	-	Ditto	-	Jonathn. Molyneaux	plane by going before the tub.	-	1
July 3						Day labourer	Fall of roof in yard mine	-	1
" 12						Metal man	A blown-out shot in a tunnel	-	1
" "						Collier	Fall of roof coal	-	1
" "						Ditto	Crushed between coal tubs below	-	1
" 30						Ditto	ground.	-	1
" 30						Day labourer	An explosion	-	1
" 30						Ditto	Fall of roof	-	1
" 30						Ditto	Fall of roof while setting timber	-	1
" 30						Ditto	Ditto	-	1
" 30						Carried over	-	42	22
" 30								12	24
" 30								4	4

List of Fatal Colliery Accidents—continued.

Date.	No. of Accidents.	Name of Colliery.	Where situated.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	Number of Lives Lost..			
									Explosions.	Falls of Roof.	In shafts.	Misfortune.
1869.	July 17	57 Rainford	St. Helens	Rainford Coal Co.	Jos. Jones	Collier	35	Fall of coal	42	22	12	24
" 21	58 Haydock	Ditto	-	Richd. Evans and Sons	Jos. Edwards and 58 others.	-	-	An explosion	-	59	-	-
" 22	59 Ince Hall	Wigan	-	Ince Hall Coal Co.	John Rowley	Drawer	16	Run over by full tubs in canal pit	-	-	-	-
Aug. 17	60 Springs	Ditto	-	Pearson and Knowles	Jas. Moss	Fireman	26	Fall of roof while drawing props	-	1	-	-
" 24	61 Tawd Vale	Ormskirk	-	Tawd Vale Colliery Co.	Henry Ashurst	Collier	44	Fall of roof	-	1	-	-
" "	62 Fensley Cross	St. Helens	-	Messrs. Bourne and Robinson.	John Hodson	Brakesman	30	Crushed between railway trucks on surface.	-	-	-	1
Sept. 24	63 Queensferry	Hawarden	-	Queensferry Coal Co.	Elias Griffiths	Collier	29	Fall of roof	-	-	-	-
" 1	64 Brymbo	Wrexham	-	The Brymbo Co.	Thos. Reynolds	Trapper	13	Killed by descending cage at the pit bottom.	-	1	-	-
" 4	65 Ravenhead	St. Helens	-	Bronailow Haydock, & Co.	Nathan Mills	Horse-keeper	60	Injuries received at the top of shafts	-	1	-	-
" 7	66 Orrell	Wigan	-	Wm. Hill Branker	Benjn. Sharrock	Collier	30	Fall of roof in Orrell left mine	-	1	-	-
" "	67 Downall Green	Ashton in Makerfield.	-	Thos. Stone and Son	John Mitton	Sinker	37	Falling into the pit at the top	-	1	-	-
" 9	68 Peasley Cross	St. Helens	-	Messrs. Bourne and Robinson.	Patt. Kelley	Collier	34	Fall of coal in a place 4 yards wide	-	1	-	-
" 14	69 Prospect	Wigan	-	Wigan Coal and Iron Co.	John Barker	Drawer	27	Fall of roof in Arley mine	-	1	-	-
" 70	Pemberton	Ditto	-	John Blundell	John Ocleshaw	Sawyer	61	Struck by piece of timber	-	-	-	1
" 71	Waterloo	Ruabon	-	Plaskynaston Coal Co.	Thos. Edwards	Banksman	46	Falling into the pit at the top	-	1	-	-
" 16	72 White Moss	Ormskirk	-	White Moss Coal Co.	Jas. Leyland	Bricksetter	20	Fall of roof	-	1	-	-
" 20	73 Garden Lodge	Ruabon	-	Garden Lodge Coal Co.	John Rytherick	Collier	96	Ditto	-	1	-	-
" 24	74 Douglas Bank	Wigan	-	John Grant Morris	Thos. Weston	Day labourer	18	Fall of roof while setting props along with others.	-	1	-	-
" 25	75 Waterloo	Ruabon	-	Plaskynaston Coal Co.	John Jones	Drawer	14	Ditto	-	1	-	-
Oct. 2	76 Edge Green	Golborne	-	Richd. Evans and Sons	Geo. Edwardson	Pony driver	16	Run over by a train-of-full-tubs in mine.	-	-	-	1
" 12	77 Orrell	Wigan	-	Wm. Hill Branker	Henry Wystanley	Drawer	31	Run over by a coal truck above ground.	-	-	-	1
" 13	78 Kirkless Hall	Kirkless, Wigan	-	Wigan Coal and Iron Co.	Jno. Pollard	Watchman	28	Ditto	-	-	-	1
								Carried over	-	101	33	16 26 8

REPORTS OF INSPECTORS OF MINES.

List of Fatal Colliery Accidents—continued.

Date.	Name of Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	Number of Lives Lost.					
								Ex Positions.	falls of Roof.	In Sheds.	Mischievous.	Above ground.	
1869. Oct. 14	79 Waterloo	Ruabon	Plaskynaston Coal Co.	Timothy Evans	Collier	25	Brought forward	-	101	33	16	26	8
” 15	80 Platt Lane	Wigan	-	Peter Fairhurst	Engine tenter	12	Fall of cannel in cannel mine	-	-	1	-	-	-
” 20	81 Haydeck	Haydock, St. Helens	Richd. Evans & Sons	Thos. Menzies	Collier	19	Drawn by the rope on the drum on an incline engine above ground. Supposed to have fallen out of the cage or while attempting to slide down the guide rod.	-	-	1	-	1	-
” 26	82 Douglas Bank	Wigan	John Grant Morris	Jno. Green	Ditto	25	Fall of coal	-	-	1	-	1	-
” 27	83 New Boston	St. Helens	Richd. Evans & Sons	Richd. Radcliffe	Drawer	44	Run over by a gang of full tubs by the breaking of an incline rope.	-	-	1	-	1	-
” 84	Riding Lane	Wigan	Cross, Tetley, and Co.	Hy. Critchley	Collier	49	Fall of roof	-	-	1	-	1	-
” 31	85 Waterloo	Ruabon	Plaskynaston Coal Co.	John Turner	Ditto	42	Ditto	-	-	1	-	1	-
Nov. 4	86 Haydock	St. Helens	Richd. Evans & Sons	Wilhm. Galliger	Ditto	30	Fall of coal	-	-	1	-	1	-
” 4	87 Standish	Wigan	Wigan Coal and Iron Co.	Adam Ellison	Hooper-on	50	Fall of coal in shaft	-	-	1	-	1	-
” 6	88 Tawd Vale	Ormskirk	Tawd Vale Coal Co.	Saml. Palling	Pony driver	13	Falling on the iron plate below ground.	-	-	1	-	1	-
” 15	89 Low Hall	Wigan	Moss Hall Coal Co.	-	-	-	An explosion by which 27 lost their lives.	27	-	-	-	-	-
” 29	90 Moss Colliery	Ince, Wigan	Pearson and Knowles	Thos. Hanmer	Purinaceman	36	Falling down the pit	-	-	1	-	1	-
Dec. 1	91 Coed Poeth	Wrexham	Rev. R. and J. Burton	Thos. Roberts	Collier	-	Fall of coal	-	-	1	-	1	-
” 4	92 Aston Hall	Chester, Hawarden.	Aston Hall Colliery Co.	Geo. Gettings	Ditto	40	Fall of roof of coal	-	-	1	-	1	-
” ”	93 Waterloo	Ruabon	Plaskynaston Coal Co.	Hy. Bradley	Fireman	33	Falling out of cage while ascending pit.	-	-	1	-	1	-
” 8	94 Ince Hall	Wigan	Ince Hall Coal and Cannel Co.	Wm. Bamber	Pusher-on	64	Crushed between coal tubs below ground.	-	-	1	-	1	-
” 9	95 New Boston	St. Helens	Richd. Evans and Sons	Jno. Shaw	Collier	45	Fall of roof	-	-	1	-	1	-
” 15	96 Pemerton	Wigan	-	Jno. Banks	Labourer	50	Ditto	-	-	1	-	1	-
” 16	97 Newtown	St. Helens	Ditto	Jno. Topping	Pony driver	13	Run over by a coal tub	-	-	1	-	1	-
” 17	98 Westminster	Mostyn, Holywell	Mostyn Colliery Co.	Joseph Evans	Coal filler	30	Fall of coal from the side	-	-	1	-	1	-
” 27	99 California	Wrexham	Westminster Coal Co.	Jas. Jones	Collier	30	Fall of roof	-	-	1	-	1	-
” 29	101 Moor Pit	Wigan	Wigan Coal and Iron Co.	Richd. Smith	Drawer	-	Run over by full tubs running down engine plane.	-	-	1	-	1	-
		Ditto	Ditto	Ditto	Ditto	15	Ditto	-	-	1	-	1	-
		Ditto	Ditto	Ditto	Ditto	-	Fall of roof in cannel mine	-	-	1	-	1	-
							Total	-	128	45	20	32	9
							Grand Total	-	234				

Mr. Evans' Report.

REPORT on the INSPECTION of MINES, and the MINES of IRONSTONE in the COAL MEASURES worked in connexion with COAL, &c., in the MIDLAND DISTRICT, for the Year ended 31st December 1869.—By THOMAS EVANS, Esq., F.G.S.

SIR,

Field Head House, Belper, 1st March 1870.

In accordance with the provisions of the Mines Regulation and Inspection Act of Parliament, I have the honour to submit for your consideration my Fourteenth Annual Report on the collieries and mines of ironstone; and the fifth on those of the Midland District, comprising the counties of Derby, Nottingham, Leicester, and Warwick.

There are now at work in these four counties about two hundred collieries, which yielded about eight million one hundred thousand tons of coal in the year I am reporting upon, and gave employment to twenty eight thousand five hundred persons. This shows a very considerable increase on the preceding years, both in the quantity of coal worked and in the number of persons employed. Early in this year I forwarded to the several collieries a circular letter, requesting the owners or agents to furnish me, for statistical purposes only, with a return showing the number of persons employed and tons of coal worked, and I have to express my thanks for the ready and courteous manner in which they complied with my request. We may be sure, therefore, that the return which accompanies this report is substantially correct, for I have had to estimate the quantities for about five small mines only.

I have not been able to get the general statistics usually forming part of the inspectors' reports, and I cannot therefore make a comparison of the death rate per ton of coal worked in this district with that of the rest of Great Britain.

I very much regret to be obliged to report an increase in the number of accidents and in the loss of life. This increase arises mainly from explosions of gas, falls of roof, and crushing by tubs underground, and is to be attributed partly to the greater output of coal, and partly, I fear, to the employment of unskilled workmen. Table No. 3 will show that from falls of roof alone there is an increase of seven deaths over last year. Accidents from this cause depend almost entirely on the skill, judgment, and prudence of the men themselves. Six separate accidents have been reported as having happened in the ironstone mines, and they were attended with the loss of six lives. Three were caused by "falls of roof," one by surface machinery, and two occurred in shafts.

As far as I have been enabled to get returns, the quantity of clay ironstone worked is about two hundred and sixty thousand tons, and the number of persons employed is about eighteen hundred. I have often in previous reports pointed out the difficulty of ascertaining the number of persons employed, the number of accidents, and the quantity of ironstone worked; for it must be understood that the iron mines included in the Act of Parliament are only those worked in connexion with coal or with any disused or exhausted coal mine. There is now, I am glad to hear, a probability that all mines will be under inspection.

TABLE No. 1.

DEATHS from Falls of Roof in the Counties of Derby, Nottingham, Leicester and Warwick during the years 1868 and 1869.

Counties.	Persons employed.		Deaths.		Coal raised.		Tons of Coal raised per Life lost.	
	1868.	1869.	1868.	1869.	1868.	1869.	1868.	1869.
Derbyshire	16,240	16,300	33	50	4,957,879	5,092,000	150,239	101,840
Nottingham	5,719	5,910	11	14	1,508,439	1,660,000	137,131	118,571
Leicestershire	3,019	3,100	8	9	608,088	650,000	76,011	72,222
Warwickshire	3,022	3,190	8	5	624,859	698,000	78,107	139,600
Total	28,000	28,500	60	78	7,699,265	8,100,000	128,321	103,846

It will be seen from the above table that the death rate in the county of Leicester, in proportion to the "get" of coal, is much in excess of the other two counties, Derby and Nottingham, notwithstanding the steadily increasing quantities produced in the last-named counties. It is too true that in Leicestershire the roof in many mines is treacherous, often giving way without the slightest warning, and that in Warwickshire the great inclination of the coal, often as much as 15 inches in the yard, its great thickness and its liability to spontaneous combustion, increase the difficulties of working.

The clay ironstones of the Bedworth and Tamworth districts are all, up to the present time, conveyed into South Staffordshire, to be there smelted and converted into cast iron.

Explosions of gas.

There were five explosions of gas, and six persons were killed by burning or by the effects of the explosions. The collieries of the Midland Counties for the most part give off but small quantities of explosive gas, so that, with ordinary ventilation and common care, these disasters ought to be avoided. I will again refer to each of these five accidents, and in doing so I shall, I think, be able to show how easily they might and ought, to have been avoided.

Falls of roof. The average loss of life from "falls of roof" and "sides of workings" for the last ten years is 26.5: this year the loss was 31, showing a very unsatisfactory state of things. I must repeat that generally the men fall victims to their own recklessness, especially in not putting in sufficient timber and availing themselves of other means afforded them for their own protection.

I have many a time during the last year seen places unsafe and unfit to be in; the men, however, take no heed of warnings, but to save themselves a little trouble, will run any amount of danger. It may be asked, why do respectable and skilful workmen continue to adopt such a line of conduct? It is, that being constantly exposed to all kinds of risks and dangers, they become thoughtless, and perhaps heedless of consequences. I do not mean to say that the death of every man from falls of roof and coal has been caused by his own carelessness; many excellent and skilful men have been killed by falls, not through any negligence of their own, but from unforeseen circumstances consequent on the nature of their occupation.

The employment of men unaccustomed to mining is often attended with increased danger, and sometimes with fatal results. It is, however, difficult to keep such persons out of the mines, especially when we consider the rapid progress this trade has made throughout the district; and the high rate of colliers' wages induces men to leave trades which are stagnant, and in which the prospect of improvement is distant.

There are doubtless some cases where more frequent supervision would be attended with beneficial results, especially in tending to lessen the loss of life from falls of roof, which are the chief cause of mining accidents. In this district in the past year,

The deaths from every kind of accident amount to 78.

,, , falls of roof amount to 31, or more than one third of the whole.

TABLE No. 2.

Deaths from Falls of Roof have taken place at the under-mentioned Collieries during the years 1867, 1868, and 1869.

Name of Colliery.	Owner's Name.	Deaths.		
		1867.	1868.	1869.
Butterley -	Butterley Iron and Coal Company	6	1	2
Staveley -	Staveley Coal and Iron Company -	3	3	1
Clay Cross -	Sir William Jackson, Bart., & Partner	3	3	2
High Park, Eastwood, &c. -	Barber, Walker, & Co. -	—	3	2
Sheepbridge -	Sheepbridge Company -	—	3	1
Swannington -	Walker and Worswick	—	3	2
Stanton -	E. Nadin & Co. -	2	—	—
Nailstone -	J. Ellis & Co. -	2	—	—
Cinderhill, &c. -	J. Wright -	2	—	—
Glascote -	Firmstone -	1	—	—
Molyneux -	Eastwood and Swingler -	1	—	—
Pinxton -	Coke & Co. -	1	—	1
Haunch Wood -	Nowell & Son -	1	—	—
Shirland -	H. Baillie -	1	—	—
Swadlincote -	Hall and Boardman -	1	—	2
Hill Top -	W. Swan -	1	—	—
Hucknall Torkard -	E. Ellis & Co. -	—	1	1
Whitwick -	W. Whetstone -	—	1	—
Victoria -	Troughton -	—	1	—
Carried forward		—	—	—

Deaths from Falls of Roof, &c.—continued.

Name of Colliery.	Owner's Name.	Deaths.		
		1867.	1868.	1869.
	Brought forward	—	—	—
Charity	Addenbrooke and Pidcock	—	1	—
Moira, Oakthorpe	E. A. Hastings	—	1	1
Newbold	C. H. Plevins	—	1	—
Shireoaks	Shireoaks Colliery Company	—	1	1
Granville	Exors. of Court Grenville	—	1	—
Dronfield	Booker	—	—	1
Birch Vale	Bennett & Sons	—	—	1
Whittington	Whittington Company	—	—	1
Grassmore	Barnes, Brothers	—	—	1
Shipley	E. M. Mundy	—	—	3
Hawkesbury	James Darlington & Co.	—	—	1
Eckington	J. & G. Wells	—	—	1
Renishaw	C. E. Appleby	—	—	1
Riddings	James Oakes & Co.	—	—	2
Birley Vale	Jeffcock & Dunn	—	—	1
Tame Valley	E. N. Nock	—	—	1
Bretby	Earl of Chesterfield	—	—	1
	Total	25	24	31

TABLE No. 3.

SUMMARY of separate Colliery Accidents in the Midland District during the years 1867, 1868, and 1869.

	1867.	1868.	1869.
Explosions of firedamp	2	1	5
Falls of roof	25	24	31
Shaft	11	9	11
Miscellaneous	21	24	23
Total accidents	59	58	70

SUMMARY OF LIVES LOST BY THE ACCIDENTS.

	1867.	1868.	1869.
Explosions of firedamp	4	1	6
Falls of roof	25	24	31
Shafts	11	9	12
Miscellaneous	24	26	29
Total deaths	64	60	78

Shafts.

Falling from surface and part way down	1	5	6
Things falling from surface	2	—	2
" " " part way down	1	1	1
Ropes and chains breaking	—	1	—
Whilst ascending and descending	5	1	1
Explosion of powder	—	1	—
Overwinding	1	—	—
Suffocated in sinking shaft	1	—	—
Fell under carriage shaft bottom	—	—	1
Jammed against shaft side, pumps giving way	—	—	1
Total	11	9	12

SUMMARY of Separate Colliery Accidents, &c.—continued.

Miscellaneous.

		1867.	1868.	1869.
Explosions of gunpowder	-	-	5	8
Suffocation by gases	-	-	1	2
On incline planes	-	-	2	7
By trams and tubs	-	-	12	5
Boilers bursting	-	-	3	—
Machinery (on surface)	-	-	1	1
Run over	"	-	—	3
Kicked by a horse	-	-	—	—
Inundation	-	-	—	—
Drawn on to drum by a rope of an incline	-	-	—	1
Total	-	-	24	26
		—	—	—
		—	—	—

TABLE No. 4.

TABLE showing the Number of Deaths, the Coal raised, and the Number of Tons of Coal raised for each Death during the 14 years ended 31st December 1869.

Dates.	Explosions of Gas.	Falls of Roof.	In Shafts.	Crushed by Tubs, and Miscellaneous Accidents.	Inundation of Water.	Boilers bursting.	Total.	Tons of Coal raised.	Tons of Coal raised for each Death.
1856	3	21	16	6	—	—	45	4,500,000	97,000
1857	15	14	6	20	—	—	55	4,750,000	86,000
1858	—	16	16	10	—	—	42	5,060,000	121,000
1859	2	18	13	7	—	—	40	5,460,000	134,000
1860	3	21	13	13	—	—	50	6,215,000	124,000
1861	3	21	15	7	23	—	69	6,503,819	94,000
1862	2	25	4	12	—	—	43	6,647,000	154,000
1863	4	26	9	8	5	—	52	7,000,000	134,000
1864	11	30	9	16	—	—	66	7,300,000	110,000
1865	9	36	13	24	—	—	82	7,575,000	92,383
1866	7	26	6	19	—	—	58	7,600,000	131,034
1867	4	25	11	19	—	—	64	7,600,000	118,750
1868	1	24	9	26	—	—	60	7,699,000	128,317
1869	6	31	12	21	4	4	78	8,100,000	103,846

TABLE No. 5.

LIST of COLLIERIES where Accidents have taken place in the years 1865, 1866, 1867, 1868, and 1869.

Name of Colliery.	Owner's Name.	Total Deaths in 5 years.
Butterley Collieries	Wright & Jessop	34
Clay Cross	Sir William Jackson, Bart., & Co.	34
Staveley	Staveley Coal and Iron Company, Limited	27
Swannington and Coleorton	Walker and Worswick	15
High Park, Watnall, Eastwood, &c.	Barber, Walker, & Co.	14
Cinder Hill, Newcastle, &c.	Wright and Co.	13
Bretby	The Earl of Chesterfield	9
Swadlincote, Cadley Hill	Hall and Boardman	9
Moira, Church Gresley, Oakthorpe	Abney Hastings	8
Shipley	A. M. Mundy	7
Hawkesbury	J. Darlington & Co.	7
Nesfield, Sheepbridge	Sheepbridge Iron Company	7
Stanton	Nadin & Co.	7
Snibston	G. Stevenson & Co.	7
Birley Vale	Jeffcock and Dunn	6
Riddings	James Oakes & Co.	6
Renishaw Park	J. and G. Wells	6
Molyneux	Eastwood and Swingler	5
Victoria	— Troughton	5
Shirland	H. Baillie	4
Gresley Wood	Gresley Wood Company, Limited	4
Glascote	Firmstone & Co.	4
Wingerworth	Wingerworth Coal Company	4

Name of Colliery.	Owner's Name.	Total Deaths in 5 years.
Swanwick	Moorewood	4
Pinxton	Coke & Co.	4
Alma, Pilsley	Thomas Holdsworth	5
Granville	Executors of Court Grenville	3
Devonshire	Devonshire Silkstone Company, Limited	3
Tibshelf	C. Seeley & Co.	3
Hucknall Torkard	E. Ellis & Co.	3
Denby	W. D. Lowe	3
Shireoaks	Shireoaks Company, Limited	3
Oakerthorpe	W. B. Wilson & Co.	3
Denby	G. and W. H. Dawes	2
Unston	Rangeley	2
Haunch Wood	Nowell & Son	2
Whitwick	} W. Whetston	2
Ibstock		
Tapton	} Tapton Coal Company, Limited	2
Tapton		
Skegby	Skegby Coal Company, Limited	2
Pooley Hall	Limited Liability Company	2
Grassmoore	Barns Brothers	2
Tibshelf	E. Chambers	2
Tame Valley	Nock Brothers	2
Digby	Hall & Co.	2
Charity	Addenbrook and Pidcock	2
Renishaw	C. E. Appleby	2
Teversall	Stanton Iron Company	2
Foxley Oaks	Limited Company	1
Woodhouse	Booker & Co.	1
Newbold	C. H. Plevins	1
Nuneaton New Colliery	Limited Company	1
Wilnecote	Perrins & Harris	1
Alma	R. W. Jackson, M.P.	1
Blackwall	E. Chambers	1
Annesley	William Worswick	1
West Staveley	William Bainbridge	1
Sutton	Executors of Richard Arkwright	1
Brampton	R. W. Jackson, M.P.	1
Exhall	E. Wilson	1
Plumbley	John Rhode	1
Axedge	Buxton Lime Company	1
Boythorpe	Luke Needham	1
Buch Vale	Bennett & Sons	1
Hill Top	R. Swan	1
West Hallam	F. Newdegate	1
Rutland	Executors of Potter	1
Giltbrook	Hicks & Co.	1
Baddesley	W. S. Dugdale	1
Boythorpe	Wingerworth Coal Company	1
Bagworth	Executors of Viscount Maynard	1
Danesmoore	Smith and Shepherd	1
Stoneyford	J. Wooley	1
Kilburne	J. Rae	1
Bridgehouse	J. Sayer	1
Comstall	G. Andrews and Company	1
Total		326

I add to this report a list of the collieries, and the number of deaths in each, from "falls of roof," not for the purpose of comparison, but merely to draw the attention of the agents to the facts. It would be obviously unfair to do so without giving the quantity of coal worked, and calculating the death rate per ton of coal raised.

Twelve deaths from shaft accidents have taken place during the year. Six persons were killed by falling into shafts; three by things falling on them; one in descending; one poor lad fell under the cage whilst attempting to push away a tub from the pit bottom; and one died from injuries received by being jammed between the side walls and the pumps.

Some of these must be considered as, and placed under the head of, preventable accidents, as, for instance, falling into shafts—a simple self-acting fence would render it impossible; things falling from the surface; ordinary care is all that is required to stop this. At Bulwell Colliery, near Nottingham, the property of the Messrs. Wright, it

appears that on the 3rd of March three men were at work at the bottom of a sinking shaft, and wishing to be drawn a short distance up the shaft to get some pipes, and then to descend, they gave the signal to the banksman, "hold up softly," and he did so for about four feet, and then let them down without directions. A rumbling noise was heard, and a chain called the "bull chain," which weighs about 70 lbs., fell from the top of the shaft to the bottom, and striking William Walters on the head, dashed his brains out. It also struck one of the other men, and fractured his leg. Across the mouth of the shaft a bridge ought to have been drawn, to prevent accidents happening by the falling of materials from the top. The under-viewer and another man had told the banksman several times of the dangers of neglecting this; but regardless of these cautions, and without drawing the bridge across the shaft, he attempted to hook the "bull chain" upon the end of the rope as a counter weight to the bucket at the other end. By some mischance the chain slipped and fell down the pit. If the bridge had been drawn across the mouth the accident could not have occurred. The coroner (Mr. D. W. Heath) directed the jury to return against John Smith, the banksman, a verdict of manslaughter; he was committed to prison, and at the next assize at Nottingham was indicted for the manslaughter of Williams Walters.

His Lordship, Mr. Justice Brett, directed the jury that they must consider whether or not the prisoner was guilty of culpable negligence. It was not a question of obeying or disobeying rules, but there was the duty which attached to every one from the mere juxtaposition of the parties, and every one was liable for rash and dangerous conduct. They must take into account the previous warning which the prisoner had received, and his knowledge of his business and duty as a banksman.

The jury found the prisoner "guilty," but recommended him strongly to mercy on the ground of his previous good character.

His Lordship sentenced him to "two months hard labour."

No doubt some of the deaths in shafts were purely accidental, and blame in such cases does not attach to any person. There is, I am happy to say, a manifest improvement in the general arrangements about shafts. The use of better appliances and machinery, and regular examinations made by competent persons, are more frequent.

At many of the pits a very clever invention by Mr. King, of Pinxton, is being introduced. It is intended to prevent accidents from overwinding and breakage of ropes by stopping the cage in its descent after an occurrence of this sort. In case of overwinding it disconnects the cage from the rope and suspends it over the top of the shaft. On the occasions in which I have heard of its being brought into use when men were in the cage it fortunately answered perfectly, and thus saved the men whose lives were endangered. At one of the Butterley Co's collieries in which this invention had been introduced, an inexperienced man attempted to wind two men out of the shaft; he started the engine all right, but when the cage arrived at the top he failed to stop it, and had it not been for the safety apparatus the two men must have been killed.

Accident No. 1 in the Schedule.

This occurred at the Devonshire Silkstone Colliery, the property of a limited liability Company in Derbyshire.

There are two shafts, both sunk to the Blackshale coal, the depth being about 164 yards; one is used for winding men and materials, and is also the upcast for the return air, the other being the downcast and pumping shaft.

On the 7th of January, about 7 o'clock in the evening, the deputy was going his rounds to examine the working places before the men of the night shift went to their work. When he got to the entrance of a pair of exploring drifts he desired the men who were following him to wait there until he had been up to the "faces" and examined them. One of the men, however, accompanied him, and they had scarcely got beyond the end of the brattice when the fireman perceived that there was a little gas in the place. He was in the act of clearing away a heap of small coal when the explosion took place at his "safety lamp," which was an ordinary Davy, and, so far as could be seen from examination, in good order.

I made an examination of the underground workings, and this particular heading. It was evident there had been only a small quantity of gas, for there was little or no damage done to the workings, doors, or brattice. I am inclined to think that in this case the brattice, which was only four yards from the face, did not fit tight, and that consequently there was but little air passing up to the end. The Davy lamp, in all probability, got red hot while the fireman was clearing away the coal, and perceiving this, he may have snatched it away, and thus fired the gas by passing the flame through the gauze.

The two injured men, the fireman and the man who accompanied him, were taken to the Chesterfield Hospital, and lived some days; they were not, however, able to give a very clear account of the accident.

No. 5 Accident

Was an explosion of gas at the Mosbro' Colliery, Eckington, belonging to Messrs J. and G. Wells. It appeared from the evidence given at the inquest that the deceased and others were engaged in sinking a shaft, and whilst in the act of lighting a fuse for blasting powder, some gas which had been allowed to accumulate exploded, killing Amos Platts and severely burning three others. The sinkers had no artificial lights to work with, as the shaft was but shallow. They knew that gas came off occasionally in small quantities, and they ought to have examined the place with a safety lamp before attempting to blast the rock. If this had been done the explosion would not have happened. The brattice was not far enough down the shaft to secure regular and sufficient ventilation, and thus the gas accumulated.

No. 32 Accident.

An explosion of gas, killing one person, took place at a small "land-sale" colliery at Compstall, near Stockport, an outlying district in the county of Derby. It is the property of Messrs. G. Andrews and Co.

The deceased was killed on going into his working place by an explosion of gas at his own naked light. I made an inspection of the underground workings, and found the far-end places almost without ventilation. The air passed along a level from the downcast shaft for a distance of about 500 yards, and at this point a single door was placed to turn it down an incline, and then along to where the men worked, which was about 1,200 yards from the downcast. It then returned along the working incline to the back of the said door, and passed on to the upcast shaft. At the top of the working incline an engine boiler was used to generate steam for a small engine fixed on the incline. Now, each time the door was opened the air passed straight to the boiler, leaving the whole of the deep workings unventilated, and, as all the coal passed through this doorway, the ventilation was constantly checked. The return airway was too small in sectional area, and the upcast shaft had partially closed. I induced the owner, Mr. Andrews, to appoint an engineer at once to report on the condition of the mine, and to make it in a fit state for men to work in. Mr. Andrews does not pretend to understand mining, and the management was left entirely to his agent, a man quite unfitted for such a position.

No. 38 Accident

Took place at the Charity Colliery, Bedworth, the property of Messrs. Addenbrook and Pidcock. Thomas Clewes, a collier, was employed on the 26th of July in the mine, and during the day he had occasion to go into a heading near to where he worked to fetch some tools. He had not proceeded far when some gas exploded at his naked light, and from the effects of the burns and shock to his system he in a few days died. I found, on examination, that the means used for ventilating this part of the workings were wholly insufficient, and although the very smallest quantity of gas was given off, still the ventilation did not properly "dilute and render it harmless."

No. 63 Accident

Occurred at the Great Britain Colliery, which belongs to the Butterley Iron and Coal Company. This explosion of gas, which caused the death of John Stanley, took place on the night of the 15th of December, and exhibited a lamentable amount of ignorance in the person employed to conduct the mine, to whose carefulness and judgment the lives of so many were entrusted. In a distant district of the colliery, in an old exhausted stall, gas was known to be present, and for the purpose of removing it, the overman and the deceased went at night and took with them a safety lamp. They altered the course of the air by means of a door, passing some through the old stall, and directly after doing this they proceeded, with the lamp top off, to the very place where they knew, in fact intended, the gas to pass. The consequence was an explosion occurred by which they were both injured; the overman, however, recovered. It is to be regretted that such ignorant men are placed in positions of trust in which the lives of others are intrusted to their care. This man was in a position which he was totally unfitted to hold.

MISCELLANEOUS ACCIDENTS.

No. 3 *in the Schedule.*

Four persons lost their lives by the explosion of a steam boiler at a small colliery belonging to Mr. Holdsworth, near Clay Cross. This took place early on the morning of the 14th of January, just about the time when the night men were being relieved by the day men. The day stoker, soon after coming to his work, discovered, that there was scarcely any water in the boiler. The proprietor's son, being on the spot, decided at once to draw the fire. They lost no time in commencing to do so, but they had not long been engaged in the operation when the boiler burst, killing Mr. Thomas Holdsworth and three others.

I examined the boiler soon after, and found it blown completely out of its seat. Indications were to be seen which left no doubt in my mind that many of the plates had been red-hot. Mr. R. B. Longridge, chief engineer to the Manchester Boiler Insurance Company, at my suggestion, also made a careful inspection, and in his evidence at the coroner's inquest stated, as his opinion, that it had burst from "over pressure consequent on its becoming too hot from want of water." The night stoker, in his evidence, said that he had started the donkey engine before he left, and the day-man stated that he found it at work when he came in the morning shortly before the explosion. There can be no doubt, therefore, that the pumps worked by the donkey engine were ineffective, and this was the cause of the catastrophe, which might not have occurred had the night stoker discovered the defect.

Happily it seldom forms part of my duty to report on accidents from boiler explosions.

It is, however, necessary that I should point out the great importance of having them constantly examined and properly repaired by experienced men. Boilers are often weakened and rendered dangerous by being patched and overhauled by persons unaccustomed to such work. This boiler was fitted with the usual steam gauge, water cocks, and float, and a safety valve.

No. 21 *Accident*

Was caused by an inundation of water from old workings, at Molyneux Colliery, near Mansfield, the property of Messrs. Eastwood and Swingler, ironmasters, of Derby.

The shafts are sunk to the "top hard" and the "dunsil" coals, which last is about 60 yards deep, and both seams were being worked. Plans of this portion of the Teversal property, made by Lady Carnarvon's surveyors, show "old workings" of great extent in the "top hard coal," bounded on the lower side by an old level (*see plan annexed.*) To the deep of this, according to a stipulation in the lease to the lessees, a barrier of 22 yards of solid coal was to be left, to protect the present workings from inundation. Now, according to the plans, Messrs. Eastwood and Swingler's working places were 70 yards from the old level at the nearest point. However, on the night of the 2nd of April, whilst the men were at work, a sudden rush of water came into the pit, filling the "dunsil" and "hard coal" workings, and soon rising to a considerable height up the shafts. Measures were immediately adopted to get the water out. The pumps were set to work at increased speed, and kept going night and day. The winding engine was constantly drawing water by means of a large bucket, and a portable engine, kindly lent by the Stanton Iron Company, was also used to wind water out of another "hard coal" shaft. In spite of all these efforts many weeks elapsed before the water was sufficiently lowered in the shafts to enable explorers to enter the workings.

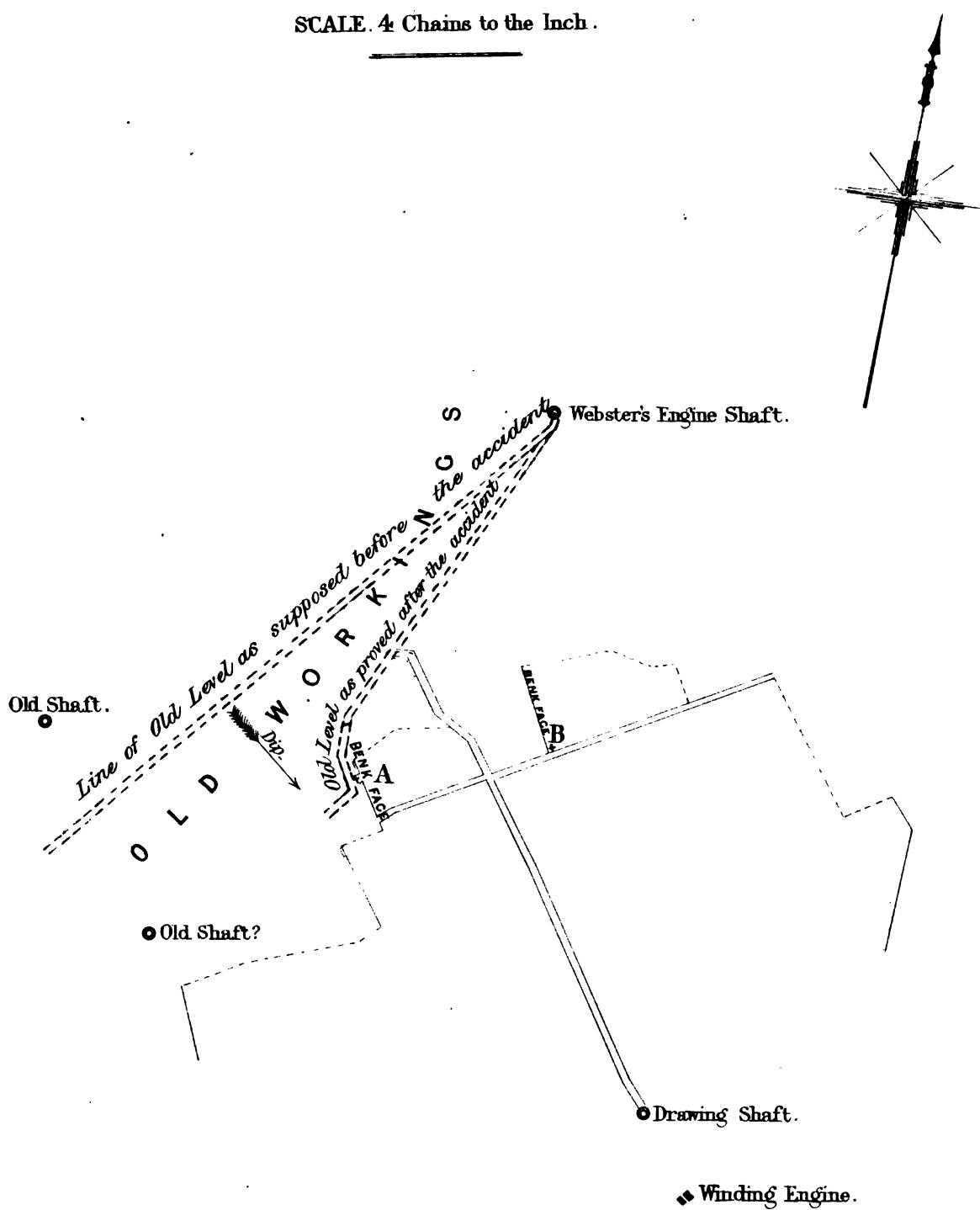
An inquest was held by Mr. D. W. Heath, coroner for the county of Nottingham, and after a patient inquiry, a verdict of "accidental death" was returned; the jury adding the following remarks, that "Messrs. Eastwood and Swingler were blamable for "the manner in which the mine was conducted; that Millership, the agent, was also to "blame for not having *bore-holes* in advance of the workings, and that the surveyors, "Messrs. Boot and Son, were censurable for the inaccuracy of the plans."

On the 26th of May, I made a report on this case, and after receiving your authority, I at once went to Nottingham, and gave my solicitor, Mr. Heath (the coroner who held the inquest) instructions to take out summonses against Millership, and it was arranged that they should come on for hearing at Mansfield on the next petty session day, viz., the 7th of July. On the 6th of July I again went to Nottingham, for the purpose of going over the evidence with Mr. Heath, and to my surprise he then informed me that Millership could not be found, and that he had that morning (the day before the case should have been heard) written me to that effect. It was now past the time allowed

MOLYNEUX COLLIERY.

TOP HARD COAL.

SCALE. 4 Chains to the Inch.



REFERENCE.

Recent Workings Colored Red.

Old Workings Brown.

Water broke in on Bank Face at the point A.

The Bodies were found

B.

◆ Winding Engine.

■ Engine Shafts.

Thomas Evans.

Inspector of Mines.

Belper, 1st March 1870.

MR. EVANS' REPORT.

by the Act for laying the informations, and consequently Millership could not be proceeded against.

I did not consider the owners responsible for the accident. They placed full confidence in their agent, and gave him full power to do everything he thought necessary for the safety of the mine; but he turned out to be an inefficient man, and incapable of directing, with safety, underground operations. There can be no doubt that he ought to have kept *bore-holes* in advance of the rise workings, and it may be seen from the annexed plan that if this had been done the position of the old level would, in all probability, have been ascertained without any mishap. However, he has been severely punished, having been obliged to give up his situation and leave the neighbourhood immediately after the inquest.

The owners have now, at my suggestion, given the whole management of the mine to Mr. Gillett, a gentleman of great experience, and he has since got the colliery in good working order.

I am glad to be able to report a most satisfactory decrease in the number of accidents Explosions of powder. from the use of blasting powder, there having been only one death from this cause during the year; this happened at Rawden Pit, near Ashby-de-la-Zouche, belonging to Mr. Abney Hastings. The deceased incautiously placed a naked light near a hole he had drilled, to ascertain if there was a sufficient quantity of powder, when immediately the explosion took place.

The following persons have been mulcted in penalties for violations of the Act of Fines. Parliament:—

Mr. Knight, of Oxclose Colliery, Dronfield, Derbyshire;
 Messrs. Armitage Brothers, Dronfield Colliery, Derbyshire;
 Messrs. Badger, Fallswood Colliery, Dronfield, Derbyshire;
 Mr. David Atchells, Agent, Compstall Colliery, Derbyshire;
 Messrs. Addenbrook and Pidcock, Charity Colliery, Warwickshire;
 Mr. Wilson, Exhall Colliery, Warwickshire.

During the year complaints have reached me from various parts of my district of the Complaints. condition of some of the mines. I have always investigated these matters, and, when necessary, drawn the attention of the owners or agents to the defects observed. I avail myself of this opportunity of stating that I shall always be glad to receive from the colliers information of any apparent danger in the mines. If they would only adopt thoroughly this mode of proceeding, in my opinion it would tend greatly to increase their own comfort and safety, and be the means of rendering valuable assistance to me in carrying out a law intended for their benefit. I need not, I hope, assure them that communications, whether written or verbal, will be strictly confidential.

It is very exceptional to find females employed at collieries in this district, except it Females and boys. be to attend to offices and places of business; indeed, I do not know a single instance of a woman being employed, except for such duties.

As regards the employment of boys, practically they do not go into the mines until they are 12 years of age. If they could be kept at school up to that time, no doubt they would receive an amount of education which would be of essential service to them in after life in whatever branches of colliery work they might be engaged; and if, after reaching this age, and obtaining employment underground, they would attend a night school with regularity, some of them might rise through the various grades until they obtained positions of trust and responsibility. It is now most difficult to obtain competent overlookers.

So many statements have recently been made with regard to inspection, I think it Inspection of mines. would be well to refer to the published statistics, and ascertain the facts before coming to a conclusion as to whether it is doing the work intended by the Legislature or not. The present Act came into operation late in the year 1855. The figures in the following table are for 1856, the first whole year after the passing of the Act, and 1868, the last year for which the general statistics are published. From the comparison it will be seen that, although the quantity of coal raised has increased 63 per cent., yet the number of deaths remains about the same.

Date.	Coal worked.	Deaths.	Tons of Coal raised per Death.
1856	64 millions	1,012	63,241.
1868	104½ millions	1,011	103,429.

It must also be remembered that 14 years ago the coal mines generally were limited in area, of shallow depth, and consequently ought to have been worked with far less danger and a smaller proportion of deaths than those of the present time, when, owing to the exhaustion of the seams near the outcrops in every field, they are of much greater depth, and therefore also of much greater extent. I believe that inspection has produced good practical results and is continuing so to do. But if the public imagine that inspection, however much it may be extended, will put an end to fatal accidents in mines they are greatly deceived, for all that can be done is to reduce them to the lowest possible point. The appointment of many more inspectors would have the effect of shifting the responsibility from the owners and agents to the Government, at least, in some degree; and if this effect is once produced, then, in my opinion, mines will not be so well managed, and more accidents will result.

I have the honour to be, Sir,

Your most obedient servant,

THOMAS EVANS,

Inspector of Mines.

To the Right Hon. Henry Austin Bruce, M.P.
Her Majesty's Principal Secretary of State.
Whitehall.

List of the FATAL COLLERY ACCIDENTS, and Loss of LIFE arising therefrom, in the MIDLAND DISTRICT during the Year ending 31st of December 1869.

Date.	No. of Accident.	Name of the Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	No. of Lives lost in Coal Mines.					
									Explosions.	Balls of Coal and Root.	In Shaft.	Mines and Ditches.	Above Ground.	Total.
1869.	Jan. 7	1	Devonshire Silk-stone.	Chesterfield	-	Devonshire Silk-stone Co.	-	James McCaul	Collier	-	-	2		
"	14	2	Hawkesbury	-	Bedworth	-	James Darlington and Co.	Thos. Hodgkinson	Ditto	-	-	1		
"	14	3	Alma	-	Chesterfield	-	Thomas Holdsworth	William Chandles	Ditto	-	-	-		
"	26	4	Seymour	-	Chesterfield	-	Staveley Iron and Coal Co.	Wm. Holdsworth	Agent	-	-	-	4	
"	27	5	Renishaw Park	-	Chesterfield	-	J. and G. Wells	William Walker	Stoker	-	-	-		
"	30	6	Swadlincote	-	Burton-on-Trent	-	Hall and Boardman	and two others.						
Feb.	9	7	Plumley	-	Chesterfield	-	John Rhodes	Robert Sweetmoore	Collier	-				
"	13	8	Axedge	-	Buxton	-	Buxton Lime Co.	Amos Platts	Sinker	-				
"	13	9	Nesfield	-	Chesterfield	-	Sheepbridge Co., Limited	Joseph Botham	Collier	-				
"	15	10	Langley	-	Alfreton	-	Butterley Company	John Cockling	Ditto	-				
"	17	11	Breby	-	Burton-on-Trent	-	Earl of Chesterfield	John Stevenson	Pony driver	-				
"	18	12	Bulley Vale	-	Sheffield	-	Jeffcock and Dunn	George Blower	Collier	-				
"	25	13	Cotespark	-	Alfreton	-	James Oakes and Son	William Hirst	Ditto	-				
								John Cook	Ditto	-				
Mar.	3	14	Bulwell	-	Nottingham	-	Wright and Co.	-	Collier	-				
"	9	15	T'evassell	-	Mansfield	-	Crompton, Newton, and Co.	John Marriott	Sinker	-				
"	10	16	Pilsley	-	Chesterfield	-	Thomas Holdsworth	Jabez Needham	Ditto	-				
								John Cutts	Horse driver	-				
													43	
													23	
													16	
													7	

List of Fatal Colliery Accidents—*continued.*

Date.	Name of the Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	No. of Lives lost in Coal Mines.					
								Explosion	Falls of Coal and Roof	In Shaft	Miscellaneous	Above ground	Total
1869.													
Mar. 15	17 Pooley Hall	- Tamworth	- Pooley Hall Company	Thomas Spencer	Pony driver	15	Accidentally kicked by another lad	-	-	1	-		
,, 16	18 Hartsay	- Alfreton	- Butterley Company	James Jackson	Deputy	42	Whilst riding in tub jammed against roof.	-	-	1	-		
,, 18	19 Morton	- Chesterfield	- Sir William Jackson, Bart.	John Neale	Collier	24	Fall of bind	-	-	1	-		
,, 31	20 Exhall	- Coventry	- Edward Wilson	Henry Mutter	Sinker	48	Fell off stage in shaft	-	-	1	-		
										1	4	3	8
Apr. 8	21 Molyneux	- Mansfield	- Eastwood and Swinburn	William Cooper	Colliers	-	Inundation from old workings	-	-	-	4	-	
,, 6	22 Coleorton	- Ashby-de-la-Z'ch.	- William Worswick	Samuel Simpson	Loader	25	Run over, tub upset	-	-	1	-		
,, 10	23 Wingerworth	- Wingeworth	- Wingerworth Company	John Dennis	Boy	15	Fell into coal screening machinery	-	-	1	-		
,, 14	24 Moira	- Ashby-de-la-Z'ch.	- Countess London	John Smallcomb	Collier	60	Fall of coal	-	-	1	-		
,, 16	25 Shireoaks	- Worksop	- Limited Company	John Fletcher	Ditto	32	Fall of roof (smothering him)	-	-	1	-		
,, 25	26 Nuttall	- Nottingham	- Wright and Co.		Ditto	15	Crushed by tubs, wire rope breaking.	-	-	1	-		
										2	-	6	9
May 3	27 Tame Valley	- Tamworth	- E. and J. Knock	Daniel Ward	Collier	-	Fall of roof	-	-	1	-		
,, 7	28 Rainshaw	- Chesterfield	- C. E. Appley	Patrick Verdon	Ditto	-	Fall of roof	-	-	1	-		
,, 11	29 Shipley	- Derby	- A. M. Mundy	Joseph Smith	Ditto	-	Fall of coal (soft coal pit)	-	-	1	-		
,, 22	30 Stanton	- Burton-on-Trent	- J. and R. Nadin	Robert Cheshire	Ditto	13	Jammed between two tubs (Eureska pit).	-	-	1	-		
,, 28	31 Granville	- Burton-on-Trent	- Exors. of Court Grenville	Thomas Thacker	Onsetter	35	A piece of coal fell down shaft	-	-	1	-		
,, 28	32 Comstall	- Stockport	- Messrs. Andrews	Charles Littleford	Collier	-	Explosion of gas	-	-	1	-		
										1	3	1	6

List of Fatal Colliery Accidents—*continued.*

List of Fatal Colliery Accidents—continued.

Date.	No. of Accidents.	Name of the Colliery.	Where situated.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	No. of Lives lost in Coal Mines.				
									Explosions	Falls of Coal and Roof	In. Shaft.	Above ground	Total
1869.													
Sept. 10	45	Swannington	Ashby-de-la-Z'ch.	William Worswick	William Siddons	Collier	16	Kicked by a horse				1	1
" 10	46	Tibshelf	Manfield	C. Seeley, and Co. -	William Massey	Sinker	36	Stone from side of shaft				1	1
" 18	47	Locoford	Chesterfield	Tapton Coal Company	William Rhodes	Collier	45	Run over				1	1
" 90	48	Shipley	Derby	A. M. Mundy	Joseph Duro	Ditto	42	Fall of roof				1	1
Oct. 2	49	Clay Cross	Chesterfield	Sir William Jackson, Bart.	Edward Rowland	Boy	12	Fell under carriage at the bottom of shaft.				1	1
" 3	50	Birch Vale	Stockport	W. Bennett	Ephram Marsland	Collier	20	Fall of roof (mountain mine)				1	1
" 12	51	Cotes Park	Alfreton	James Oakes and Co.	Wright Walker	Ditto	21	Fall of bind				1	1
" 23	52	Moira	Ashby-de-la-Z'ch.	Countess Loudon	Joseph Sharpe	Ditto	38	Explosion of powder (Rawdon pit)				1	1
" 30	53	Clay Cross	Chesterfield	Sir William Jackson, Bart.	John Smith	Horse driver	19	Fall of bind				1	1
Nov. 8	54	Tanyard	Alfreton	Butterley Company, Limited	Enock Berresford	Collier	31					1	1
" 18	55	New Hollingwood	Chesterfield	Staveley Company, Limited	Paluck Morgan	Ditto	22	Run over on incline				1	1
" 19	56	Whittington	Chesterfield	Whittington Co., Limited	George Hillaley	Ditto	69	Run over underground incline				1	1
" 24	57	Hucknall	Nottingham	E. Ellis and partners	Edward Britton	Horse driver	13	Fall of coal (black shale)				1	1
" 25	58	Swannington	Ashby-de-la-Z'ch.	William Worswick	Fred. Johnson	Labourer	14	Fall of sides of main road				1	1
								Fell into fly wheel in stepping over shaft.				1	1
Dec. 1	59	Swadlincote	Burton-on-Trent	Hall and Boardman	James Crackle	Boy	13					2	2
" 4	60	Denby	Alfreton	W. D. Lowe	Thomas Kerry	Labourer	14	Fell off screens playing during dinner hour.				1	1
" 6	61	Brand	Coalville	Butterley Company	Samuel Jepson	Collier	32	Fell into unsenced working shaft				1	1
" 7	62	Snibston		G. R. Stephenson and Co.	Joseph Bettison	Labourer	18	Fall of roof				1	1
								Drawn on to the drum of an incline				1	1

List of Fatal Colliery Accidents—continued.

Date.	Name of the Colliery.	Where situated.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.		No. of Lives Lost in Coal Mines.			
							Explosions	Rails of Coal and Road.	Miscellaneous.	In Shafts.	Above Ground.	Total.
1869. Dec. 11	63 Swadlincote	Burton-on-Trent	Hall and Boardman	Thomas Wilkinson	Collier	24	Fall of coal	—	—	—	—	—
" "	64 Granville	Burton-on-Trent	Exors. of Grenville	Stephen Evans	Stoker	17	Fell down shaft out of his seat on the chain.	—	—	—	—	—
" 15	65 Great Britain	Alfreton	Butterley Company	John Stanley	Collier	50	Explosion of gas	—	—	—	—	—
" "	66 Skegby	Mansfield	Skegby Coal Company	William Farnsworth	Stoker	19	Fell into fly wheel pit whilst asleep.	—	—	—	—	—
" 23	67 Palmerston	Alfreton	Coke and Company	James O'Brien	Collier	38	Fall of roof	—	—	—	—	—
" 24	68 Breetby	Burton-on-Trent	The Earl of Chesterfield	William Pepper	Horse boy	13	Run over	—	—	—	—	—
" 31	69 Shipley	Derby	E. M. Mundy	John Anthony	Collier	13	Fall of roof, soft coal pit	—	—	—	—	—
" 70	70 Langton	Alfreton	Coke and Company	William Green	Onsetter	35	Fell down shaft whilst changing carriage.	—	—	—	—	—
										1	4	3
										1	1	12

REPORTS OF INSPECTORS OF MINES.

LIST of the FATAL IRONSTONE MINE ACCIDENTS, and Loss of LIFE arising therefrom, in the MIDLAND DISTRICT during the Year ending 31st of December 1869.

Date.	Name of the Mine.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remark.	No. of Lives lost in Ironstone Mines.				
								Explosions.	Falls of Roof.	In Shafts.	Miscellaneous.	Above Ground.
1869.												
July 1	1 Hawkesbury	- Coventry	- Hawkesbury Coal Company	John Morris	- Miner	- 66	Fall of roof	-	-	- 1	-	-
" 4	2 Butterley	- Alfreton	- Butterley Iron and Coal Company.	George Huston	- Ditto	- 14	Fall of roof	-	-	- 1	-	-
Sept. 14	3 Denby	- Belper	- W. H. and G. Dawes	Thomas Creswell	- Ditto	- 48	Fell down shaft	-	-	-	- 1	-
Oct. 15	4 Denby	- Belper	- W. H. and G. Dawes	John Parkin	- Sinker	- 42	Hit on the head by the handle of a "winch."	-	-	-	-	-
Nov. 25	5 Butterley	- Alfreton	- Butterley Iron and Coal Company.	John Munay	- Miner	- 27	Fall of roof	-	-	- 1	-	-
Dec. 16	6 Wingerworth	- Chesterfield	- Wingerworth Iron Company	-	- Boy	-	Fell down shaft	-	-	-	- 1	-
												Total - 3 2 1 - 6

1st March 1870.

THOMAS EVANS.

Mr. Wynne's Report.

REPORT on the INSPECTION of MINES for the DISTRICT comprising NORTH STAFFORD-SHIRE, CHESHIRE, and SHROPSHIRE, for the Year ending 31st December 1869.

SIR,

Stone, February 28th, 1870.

IN compliance with your instructions, I have the honour to report to you the number of accidents, and loss of life in connexion therewith, which have occurred in the district under my charge during the past year; and although in some points this Report compares favourably with the previous year, in others, I regret to say, there is not that decided improvement that I looked forward to when my last Report was submitted for your consideration. I do not look to more stringent legislation or to numerous inspectors to prevent accidents, but to a better class of men who shall be employed by the colliery proprietor in the daily superintendence of his colliery, men who look upon those accidents that are preventable as in some measure discreditable to themselves, and reflecting on their supervision and management.

I hope that, actuated by a sense of what is due to themselves and to those employed by them, every mine owner in this country will before long see to it, that over his colliery a responsible and competent overseer is appointed, whose business it shall be to secure, as far as in him lies, a faithful and regular observance of the regulations provided for the management of the colliery, and when this is the case (and not until then) I am persuaded that the accidents, both as to number and magnitude, will be reduced to such an extent that we shall hear no more about any necessity for appointing additional inspectors.

I also am of opinion that if the owner was made responsible for the negligence of his manager the result would soon be that none but competent men would be employed, for the interest of the master would soon secure the discharge of the ignorant and incompetent overseer.

I am aware that the opinion that an increase of the number of Government inspectors would tend greatly to the lessening of the number of accidents has been disseminated to a great extent among miners, and has no doubt made a considerable impression on their minds; but, with all respect for the views of others, I cannot subscribe to such an opinion; my idea of the duties of an inspector being to see that proper rules are in force at every colliery within his district, and to take care that every infraction of general or special rules brought under his notice is not allowed to pass without meeting with the punishment it is his bounden duty to enforce, without fear or favour.

Explosions of Firedamp.

Only three explosions of firedamp have occurred during the year, but each of these was brought about by sheer carelessness on the part of the men employed in the mine. In the case of No. 4, at Woodshutts Colliery, the men were pushing forward parallel brows up an incline of about 1 in 4, and all were ordered to work with lamps, but on the morning of the explosion a driver-boy saw one of the deceased men conceal about his person two or three candles, and one that had been lighted was afterwards found in his working place. Although, in my opinion, it was not there that the gas was ignited, the fact clearly shows that lax discipline will sooner or later lead to disastrous consequences. This colliery was at that time under the management of Mr. J. T. Woodhouse, one of the most able viewers in England; and what further is necessary to prove the fallacy of expecting periodical inspections to furnish a panacea for all the evils of colliery working, unless such inspection is supplemented by constant attention on the part of the resident overseer?

In the case No. 9 there had been a heavy fall of roof, and the colliers had been ordered to work in the coal along side the fall to the far end, but the deceased man, from mere curiosity (as he expressed it) climbed on to the top of the fall to see how far they should have to drive, and fired the gas, the other men escaping with but slight burns.

In No. 38, at Ubberly Colliery, men were occupied in bringing back two drifts, each aired with separate splits; the air from the lower one passing all round the goaf, and back along the deep head to the up-cast pit; but on the morning of the explosion they thirled or cut through into the upper drift, and sent a message to the underlooker to tell him so. Afterwards, the men, finding the air increase, thought there could be no harm in enlarging the aperture, forgetting that any gas in the wastes had been carried away to the pit. The consequence was that, under the altered circumstances, the gas was drawn to the very spot where they were working with naked lights, and before the underlooker could reach the spot the gas passed on the lights and caused the death of two men.

Falls of Coal and Roof.

Under this head I have again to report no "improvement," for although the accidents are three in number less than in 1868, this is not such an improvement as can be pronounced satisfactory. I attribute the present unfortunate state of things in some measure to the extent to which the use and abuse of powder is tolerated, together with the negligence manifested by those in authority in not requiring the regular setting of posts and sprags, whether wanted or not. After coal has been blown down, and the roof shaken by the blast, the loaders are set to work under it, when the shaken roof, bereft of all support, comes down on the men; but if it stands until the work is all done under it, then the roof is propped. I have no hesitation in saying that if the abuse of powder were checked, temporary propping generally adopted, and the special rule as to propping and spragging strictly carried out, the deaths from falls of coal and roof would be reduced in my district at least 40 per cent.

In Shafts.

It is very satisfactory to report a still further decrease in the number of persons who have lost their lives in shafts. In 1867 it was 20; in 1868, 10; and in 1869, 7; and I hope that the colliery managers having proved that most of these accidents are preventible, they will continue that diligent attention to the minor details of winding which can alone prevent such accidents, and place the district under my charge in as creditable a position as other districts of the kingdom.

Miscellaneous Underground.

Three lives have been lost by explosions of gunpowder, and, seeing the reckless manner in which it is used in the collieries in my district, I cannot but look forward to an increase rather than to a diminution of such accidents. Wherever blasting is allowed it is absurd to suppose that the use of lamps will in any way tend to prevent explosions of fire damp, for, according to the modern system of getting coals, blasting is almost the only means employed. Holing under or over, or cutting the ends, is nearly abandoned, and the enormous charges of powder that are used not only shiver the coals to atoms, and make slack, a drug in the market, but shake the roof to such an extent that falls of roof are an almost inevitable result.

At some collieries where the use of powder has been discontinued the advantages pointed out have been sensibly felt.

The deaths on inclines are also on the increase, which is to some extent owing to the want of care in laying the rails, and as a preventative I would suggest that all sleepers should be prepared with gouged-out spaces for the rails to fall into, and then if a nail sprang the rail would still keep in its place. Owing to the fact that the tubs travel at a much greater velocity on inclines than on roads, increased care should be bestowed upon such inclines, but, owing to the temporary nature of some of them, the rails are often laid in the roughest manner. The result is that the tubs run off several times in a day, and lead to lamentable accidents.

On Surface.

I am happy to report that under this head only one fatal accident has occurred, which was purely accidental, the engine-man having fallen beneath the crank, and it is but due to the parties who carry out the surface arrangements in my district to acknowledge the care and attention they have exercised during the last year so as to produce so satisfactory a result.

Ironstone Mines.

In no district are the accidents in mines of this character so fully and honestly reported as in the district under my charge, and consequently the number of deaths reported in my list appears excessive. The effect of this honest and fair action on the part of the persons having charge of these mines is very good, and I have much pleasure in stating that every suggestion made by me to prevent a recurrence of an accident is at once cheerfully adopted, and the result has been to reduce the deaths from 22 in 1868 to 12 in 1869.

Notwithstanding all that has been said and written on the subject, there is still a strong inclination on the part of charter-masters to neglect carrying their air-ways to the ends of their faces of work, thus having a blind end of 10 or 12 yards without ventilation. A frequent inspection of the workings and air-ways by a competent overseer in the way I have suggested would discover this and lead to an immediate rectification.

The subject of primary education becomes easier to deal with the better it is understood, and those difficulties in connexion with it which a few years ago were thought insuperable are now scarcely named when the question is discussed. The miners almost to a man may be said to be in favour of compulsory secular education, being convinced of the folly of keeping boys from work, unless by doing so their education is to be secured, and in those cases where parents are fully occupied as bread-winners I do not see how such education is generally to be ensured unless its acquisition and furnishing is made compulsory by law.

Experience has convinced me that but little (if any) inconvenience would be felt in my district, if no boys were allowed to work in mines under the age of 12 years, and, whatever restrictions are imposed after that age, the half-time system is not in my opinion the most advisable way of preventing the partially educated boy from lapsing into the ignorant man. Under the present arrangement, it would be better for boys to work alternate days than that the working of the pit should be interfered with by changing the staff of boys in the middle of a day's work.

Much is now being done for shortening the hours of labour of the working man, and if miners have the disposition to make and the strength to enforce resolutions and rules for shortening their hours of labour in the pit, surely the boys ought not to be placed under less favourable conditions.

There are very few districts where the want of schools is a matter of complaint, the owners and occupiers of mines having well done their duty in that respect, but unfortunately their liberality is greatly prejudiced by the sectarian character of the schools provided. To this may be attributed the lack of interest manifested by the workmen in the success of the day schools, while at the same time the large majority of them support, to the extent of their power, the Sunday school in connexion with their own place of worship, and the result is too often to altogether shut out Roman Catholics from education on week days in districts where they are not numerous enough to maintain a day school.

With one exception, the coroners in my district ably second my endeavours to probe to the bottom every case that comes before them, and allow me to elicit whatever has the semblance of negligence, so as to enable them to point out to the persons in charge of a colliery where a death has been caused how and in what way such a calamity may be avoided for the future, and this is one of the most important services that can be rendered to the mining population.

I have, &c.

THOMAS WYNNE,
Inspector of Mines.

The Right Hon. H. A. Bruce, M.P.,
Her Majesty's Principal Secretary of State,
Whitehall, London.

REPORTS OF INSPECTORS OF MINES.

LIST of the FATAL COLLIER ACCIDENTS, and LOSS of LIFE arising therefrom, in the NORTH STAFFORD, SHROPSHIRE, and CHESHIRE DISTRICT, during the Year ending
31st December 1869.

Date.	No. of Accidents	Name of the Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	Number of Lives lost In Coal Mines.				
									Explosion and Roof.	In Shaft.	Miscellaneous.	Above Ground.	Total
1869.													
Jan. 8	1	Lilleshall	Wellington	Wm. Bailey	-	Collier	-	Fall of coal	-	-	-	95	
" 11	2	Shelton	Hanley	J. Faulkner	-	Ditto	-	Fall of roof	-	-	-	95	
" 26	3	Daisy Field	Hyde	Jas. Davis	-	Ditto	-	Crushed by trams on incline	-	-	-	40	
Feb. 10	4	Woodshutts	Newcastle	W. Smith & others	-	Ditto	-	Explosion of firedamp	-	-	-	-	
Mar. 12	5	Benthall	Broseley	Wm. Overholt	-	Ditto	-	Fall of roof	-	-	-	22	
" 6	6	Shelton	Hanley	R. Morgan	-	Boy	-	Crushed at bottom of the pit	-	-	-	13	
" 7	7	Silverdale	Newcastle	W. Knight	-	Collier	-	Fall of roof	-	-	-	23	
" 8	8	Daisyfield	Hyde	W. Harrison	-	Ditto	-	Fall of roof	-	-	-	22	
" 22	9	Bradley Green	Congleton	J. Sherratt	-	Ditto	-	Explosion of firedamp	-	-	-	32	
Apr. 1	10	Norton	Burslem	E. Elliott	-	And another	-	Explosion of powder	-	-	-	7	
" 8	11	Dark Lane	Wellington	J. Oliver	-	Hooker-on	-	Timber fell on him out of the skip	-	-	-	37	
" 14	12	Pinnox	Tunstall	S. Ellerton	-	Collier	-	Fall of coal	-	-	-	60	
" 18	13	Bucknall	Hanley	J. Pickering	-	Engine-man	-	Crushed by falling under the crank	-	-	-	52	
" 22	14	Poynton	Stockport	J. Hooley	-	Collier	-	Fall of roof	-	-	-	20	
" 28	15	Shelton	Hanley	Jno. Jones	-	Ditto	-	Crushed through jig chain breaking	-	-	-	19	
" 29	16	Tunstall	Tunstall	H. Meir	-	Boy	-	Fell from inset part way down	-	-	-	13	
" 30	17	Bucknall	Hanley	Homer and Co.	-	Collier	-	Fall of coal	-	-	-	21	
May 10	18	Longton Hall	Longton	J. Glover and Son	-	Ditto	-	Fall down the shaft	-	-	-	23	
" 22	19	Madeley Wood	Ironbridge	Anstice and Co.	-	Ditto	-	Fall of roof	-	-	-	61	
" 24	20	Bucknall	Hanley	Homer and Co.	-	Ditto	-	Ditto	-	-	-	37	
June 3	21	Priors Lee	Wellington	Earl Granville	-	Ditto	-	Fall of coal	-	-	-	30	
" 4	22	Shelton	Hanley	R. Bennett	-	Ditto	-	Ditto	-	-	-	27	
" 10	23	Ditto	Ditto	J. Austin	-	Driver	-	Crushed by a cross bar in the level	-	-	-	18	
July 17	24	Longton Hall	Longton	Jas. Penny	-	Collier	-	Fall of roof	-	-	-	50	
Aug. 6	25	Woodshutts	Newcastle	Jno. Marshall	-	Engineer	-	Fell out of rope in pumping pit	-	-	-	28	
" 7	26	Foley	Longton	T. Salmon	-	Collier	-	Fell on to coals and injured his spine.	-	-	-	32	
" 16	27	Middle Cale	Stockport	J. Cope	-	Ditto	-	Fall of coal	-	-	-	90	
" 23	28	Priors Lee	Wellington	T. Arkinstall	-	Ditto	-	Fall of roof	-	-	-	34	
Sept. 21	29	Woodshutts	Newcastle	H. Hamblett	-	Ditto	-	Crushed by a tub at the bottom of a jig.	-	-	-	20	

List of Fatal Colliery Accidents—continued.

Date.	No. of Accidents.	Name of the Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	Number of Lives lost In Coal Mines.		
									Explosions.	Falls of Coal and Roof.	Miscellaneous.
1869.											
Sept. 23	30	Dunkirk	-	Dukinfield	-	J. Pemberton	-	Fall of roof	-	-	-
" 25	31	Talke	-	Newcastle	-	T. Gibson	-	Ditto	-	-	-
Oct. 11	32	Lilleshall	-	Wellington	-	Chas. Marshall	-	Fall of coal	-	-	-
" 13	33	Silverdale	-	Newcastle	-	E. Harding	-	Ditto	-	-	-
" 25	34	Apedale	-	Ditto	-	M. Bostock	-	Ditto	-	-	-
" 28	35	Shelton	-	Hanley	-	Thos. Morgan	-	Premature explosion of a shot	-	-	-
" 28	36	Dunkirk	-	Dukinfield	-	Ditto	-	Run over on incline	-	-	-
Nov. 1	36	Dunkirk	-	Burslem	-	Ditto	-	Fall of coal	-	-	-
" 9	37	Bank Top	-	Hanley	-	Jno. Dearden	-	Crushed at bottom of jig	-	-	-
" 10	38	Ubbenley	-	Old Park	-	J. Oliver & another	-	Explosion of firedamp	-	-	-
" 11	39	Old Park	-	Wellington	-	E. Stanley	-	Fall of roof	-	-	-
" 28	40	Talke	-	Newcastle	-	Jno. Bennett	-	Ditto	-	-	-
Dec. 3	41	Madeley Wood	-	Wellington	-	S. Pugh	-	Ditto	-	-	-
" 14	42	Stone trough	-	Tunstall	-	L. Whalley	-	Walked into the shaft, thinking the	-	-	-
" 17	43	Bank Top	-	Burslem	-	Wm. Griffiths	-	waggon was over it.	-	-	-
" 23	44	Lawton	-	Newcastle	-	Jno. Brundred	-	Fall of roof	-	-	-
" 31	45	Sneyd	-	Burslem	-	R. Davies	-	Fall of roof	-	-	-
								Total	-	-	-

REPORTS OF INSPECTORS OF MINES.

List of the FATAL IRONSTONE ACCIDENTS, and Loss of LIFE arising therefrom, in the DISTRICT of NORTH STAFFORD, SHROPSHIRE, and CHESHIRE, during the Year ending 31st December 1869.

Date.	Name of the Mine.	Where situated.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	No. of Lives lost.		Total
								Explosions.	Falls of Coal and Rock.	
1869.										
Jan. 25	1 Talke	-	Newcastle	-	North Stafford	Coal	Geo. Pitchford	Miner	- 36	Fall of stone
" 29	2 Sneyd	-	Buralem	-	Company. C. and J. May	-	Geo. Winstanley	Ditto	- 36	Ditto
Feb. 1	3 Chatterley	-	Tunstall	-	Chatterley Co.	-	P. Doyle	Ditto	- 31	Crushed whilst getting into the cage
" 18	4 Foley	-	Longton	-	Goddard and Sons	-	R. Bough	Boy on bank	- 12	Fell down the pit
Apr. 12	5 Old Park	-	Wellington	-	Old Park Co.	-	H. Hollis	-	- 27	Fall of roof in the road
" 22	6 High Carr	-	Newcastle	-	J. H. Williamson	-	J. Pearson	Boy	- 11	Fell down the pit
June 7	7 Crackley	-	Ditto	-	Stanier and Co.	-	T. Johnson	Miner	- 31	Fall of roof
" 15	8 Grange	-	Buralem	-	Heath and Son	-	D. Harrison	Ditto	- 45	Ditto
" 20	9 Lightmoor	-	Wellington	-	Coalbrookdale Co.	-	R. Morris	Boy	- 17	Ditto
Aug. 26	10 Chatterley	-	Tunstall	-	Chatterley Co.	-	J. Woodcock	Miner	- 37	Fall of roof on 26th July
Sept. 27	11 Clough Hall	-	Newcastle	-	Kinnerley and Co.	-	T. Rhodes	Boy	- 14	Crushed by a tram in wagon road
Nov. 24	12 Madeley Wood	-	Wellington	-	Ansice and Co.	-	Jno. Rogers	Miner	- 23	Fall of roof
								Total	-	

NUMBER and NATURE of FATAL ACCIDENTS to PERSONS employed in and about COAL MINES and COLLIERIES in the District comprising NORTH STAFFORD, SHROPSHIRE, and CHESHIRE, during the Years 1865, 1866, 1867, 1868, and 1869.

Year.	Falls in Mine.	In Shaft.	Miscellaneous Underground.	On Surface.	Gross Total.	
					Total	Miscellaneous on Surface.
1865	Number of Accidents	- - -	- - -	6 9 13	22 2 1	2 1
"	Number of Deaths	- - -	- - -	12 9 13	22 2 1	2 1
1866	Number of Accidents	- - -	9 3 8	11 - -	2 3 -	2 1
"	Number of Deaths	- - -	142 9 8	11 - -	2 3 -	2 1
1867	Number of Accidents	- - -	11 10 15	25 - -	4 5 1	3 -
"	Number of Deaths	- - -	17 10 17	27 - -	3 7 5	3 -
1868	Number of Accidents	- - -	7 10 18	28 - 1	2 2 -	3 -
"	Number of Deaths	- - -	9 10 18	28 - 3	2 2 -	3 -
1869	Number of Accidents	- - -	3 10 15	25 - -	2 1 2	7 -
"	Number of Deaths	- - -	7 10 15	25 - -	2 1 2	7 -

Mr. Brough's Report.

REPORT of the WORKING of the MINES INSPECTION Act (23 & 24 Vict. c. 151.) for the SOUTH-WESTERN DISTRICT, during the Year ended 31st December 1869.—
By LIONEL BROUGH, Esq., F.G.S.

SIR,

Clifton, 1st March 1870.

I have the honour to lay before you the report on the South-western Division of Mines for 1869, as required by the 27th section of the Act of Parliament.

I grieve to say that, notwithstanding the fact of fewer casualties than in the previous year, more lives were lost. In 1868, fifty-nine separate accidents occurred, and sixty-one persons were killed. In the year now under notice, fifty-one accidents were reported, unfortunately attended with sixty-eight deaths. This excess is entirely attributable to explosions of fire-damp. The unfavorable character of the year is strongly exhibited in the "general summary," where it is seen that in 1868 the amount of coal per single death was 101,639 tons. Now, I am sorry to say, that quantity has descended to 91,912 tons for each life lost. A collateral and more striking sign of these bad results appears in the fact that I am bound over to appear as a witness on mining manslaughter cases at four different county assizes, every one of them in this present month of March.

The first explosion of the year happened on the 27th of January in the Cwmsychan pit at the Abersychan Iron Works, and it caused the death of a man and a boy, some others at the same time being badly burned. A shift of men were at work in the night, and left a canvass sheet door purposely open for two hours, which most certainly afforded abundant time for gas to accumulate in dangerous quantities, and when the haulier came in, as a matter of course it fired at his naked light. The reason the door was kept open was, that it facilitated their labour, inasmuch as it enabled them to stow the bottom cuttings in a place nearer than the one pointed out to them by the overman. This explosion most decidedly ought never to have taken place.

On the 22nd of February, a gang of men went early in the morning to work in a heading in the Dean Lane pit at Bedminster, and finding a little gas hanging in the top on the "rise side," occasioned by a fall of coal in the night, they resorted to an obsolete and most objectionable mode of getting rid of it. This was protested against by one of them, who appears to have possessed some common sense at all events, nevertheless, he who proposed it, and was in fact the head man of the party, actually carried into effect the old fashioned and perilous method of firing the gas with naked flame. The natural result was that they were burned, and the perpetrator of the mischief himself so seriously injured that he died on the following day. It is needless to say that there should have been no explosion in that heading; however, it is but another proof of how calamities are brought about by ignorance and obstinacy.

Another fire-damp fatality happened on the 17th of March in the "stable pit" at Nantyglo. A frame door had to be set up in aid of the ventilation, and also to afford a readier entrance to the "returns;" further in there was a certain quantity of carburetted hydrogen gas. They were effecting the door operation with naked lights, whereas it should have been performed with safety lamps, because the gas was known to be near them. Another error was to permit a number of people to loiter about the place looking on; they should have sent them all out of that district of the pit in case of its firing, which in fact it very soon did.

I by no means intend to praise the ventilation of this mine; still, if they had extinguished all the naked lights, and got the door up with safety lamps, the explosion most decidedly would not have occurred.

Thus, I have now enumerated three instances of neglecting to use the preventative means which in each case they actually had in their possession, or, in other words, every one of these fatal events might have been absolutely avoided.

The next explosion is graver in degree than those already described. It took place on the 25th of May in the Cwm-nant-ddu pits belonging to the Abersychan Iron Works. In the night time seven persons were employed in the very small district that fired; they all perished.

My evidence at the inquest (abridged) will sufficiently explain the catastrophe ; therefore I herewith insert it.

"When I received the 'notice,' I at once proceed to Cwm-nant-ddu Colliery, and minutely inspected that portion of the work called the No. 1 deep heading, and its group of nine stalls. On the 1st of June I again descended, and made further investigation in both the No. 1 and the No. 2 deep headings, as also in other portions of the colliery. The disaster took place in the "meadow vein" of coal, which in the aforesaid deep heading is about eight feet in thickness, and has not heretofore been considered a very fiery seam ; indeed, in my opinion the gas did not proceed from the coal at all, but from the top, as I will endeavour to explain. But I must premise that the present event was accompanied by unusual and melancholy circumstances. I have had to inquire into very many cases of serious explosion, and in most of those some person or other remained to afford a reasonable idea of what had really taken place ; but in the matter which renders it necessary that we should meet here this day, there are none to appeal to, not one link of the human chain is left to give the slightest clue as to the actual nature of the occurrence. I have had to find it all out and elaborate it as best I could by patient investigation. I will now resume my description. The meadow vein for the most part carries a shale or "clift" roof, often called in the neighbourhood a clod roof ; but singularly enough, in the No. 1 deep heading the top is a mass composed of interlaminations of rock and carbonaceous matter. This sort of stuff very often throws off inflammable gas when disturbed, and in the case now under notice it eliminated a very large quantity, indeed. It is remarkable that it is only over the stalls in the deep heading No. 1 that these "rashings" form the top. In the No. 2 deep heading, close by, the roof appears to be shale or clod.

The upper stall of all in the No. 1 deep heading was obliged to be stopped some eight months ago, in consequence of a very heavy fall, but which fall threw off no fire-damp. It was afterwards resumed, and merged into another, which is now called the top stall, and thus it went on until another fall took place, but this time accompanied by gas. At length, on Tuesday night, the roof again underwent movement or squeeze, but it is impossible to say whether actual fall occurred before the explosion or after it, but whether or not there is but little doubt as to an eruption of fire-damp. Evidence can, I believe, be put in, that towards twelve o'clock of that fatal night the sound of a heavy fall was heard ; but, be that as it may, there is the fall now, for I was up to it then and also on the following Tuesday, and on both those occasions there was plenty of gas, and I beg to repeat that gas is still exuding. There is reason to believe that certain men (now dead), found gas coming off in the face of the present No. 1 stall, or that they were alarmed by the grinding and working of the top, and so considered it necessary to leave that face. Myself and two other witnesses think that two of these men then went down to stall No. 7, where they had agreed to cut bottom for other workmen. But we think that on there way thither they stopped, and filled a tram with coal, and then passed down to carry out their agreement to cut bottom as aforesaid. After that there is little doubt that they returned up to stall No. 1 to get their clothes, and then the pit fired ; the deranged state of their dress induces this opinion. Whether the brattice was close enough to the face or not is a question ; but with close brattice, or no brattice at all, the emptying gas would get through the spout holes into the lower stalls by reason of the very large quantity that must have come off. I traced the course of the blast down as far as stall No. 5, and then it flew up the deep heading and through the top door, almost if not quite into the main level. The timber just above stall No. 5 showed by its charred surface which way the blast flew, and the very stall through which it emerged. The head viewer had an idea that the top door was carelessly left open, and so an accumulation of gas ensued. I do not adopt that view ; it is not consistent with the physical evidence that came under my notice. Besides, I do not like to accuse the dead ; and, moreover, it does not so well account for the explosion as the signs I myself observed.

"There is little doubt that before the explosion there passed into that deep heading and its stalls about six thousand cubic feet of wind per minute. That does not sound like a very considerable quantity of air, but then it came direct from the surface, and was entirely uncontaminated, not having passed through any workings whatever. Also, I must state that the whole of that No. 1 deep heading, with all its nine stalls, did not cover an area of more than an acre and three quarters. Now, taking into consideration the three words "under ordinary circumstances," (which three words I hope will be expunged from the next Act of Parliament,) I am of opinion that six thousand cubic feet of air complied in this case with the first general rule. It was fresh dense air, well calculated to enter into a heading to the deep, only there would have been a better

chance for the poor men if there had been more of it; still I cannot swear that the first general rule was violated.

"Finally, I must state that at whatever exact moment the fall in the face of the upper stall took place, the gas that came off must be classed as a blower,—a dumb blower, certainly,—but still a blower. It was flying off immediately after the explosion; it is coming off even now, though with somewhat diminished force."

All the above is but an epitome of what I stated before the coroner and his jury, and the verdict they returned was, that "the deceased were accidentally killed by an explosion " of gas, caused by a blower in the top of a stall at Cwm-nant-ddu-works." I have only to add, that at the date of this annual report that "blower" is still coming off, now more than nine months after the explosion.

The lithological change of roof really and truly brought about the disaster. If the shale top had not disappeared the gas would not have been met with; it was from the carbonaceous matter in the "rashings" that the fire-damp burst forth.

The fifth of these occurrences was in the "deep pit" at Nantyglo on the 2nd of October last, whereby two men were burned, one of whom died, and the other has since recovered. At the inquest the matter was considered by the coroner and his jury to be so serious that they returned a verdict of manslaughter against the overman, who was accordingly committed for trial at the assizes to be held this month in the town of Brecon.

With respect to this "deep pit" affair, I was instructed to proceed under the Act against the owner for disregard of the first general rule, and against the agent, because neither the Home Office or the inspector of the district were informed of the explosion at the time of its occurrence. I carried out this command, and mitigated penalties were inflicted on both parties by the magistrates then sitting on the bench at Tredegar.

Notwithstanding the defective ventilation, the misfortune might easily have been obviated, by simply using a safety lamp at the period of time when they struck through into the stall that they knew was infested with gas. This is a fourth instance of the loss of a life that might unquestionably have been saved.

The last calamity of the year by fire-damp took place on the morning of the 22nd of October, in the "Mackintosh" side of the Westbury Iron Company's Newbury Colliery, not far from the Mendip Hills in Somersetshire. It is a far more serious event than any yet referred to in this report, inasmuch as it occasioned the death of eleven of the workmen. Some were brought out of the pit dead; some succumbed shortly afterwards; others, again, lingered many days before they passed away. If I remember rightly, a dozen persons went down the pit that morning, of whom, I think, but one survives. Some of them must have suffered terribly from burns and contusions, from the after damp, and from the amount of dust blown up. Pulverulent matter is of serious import to the coal miner at all times, even in the absence of explosion, and under the most favourable conditions of good management; it affects his digestive organs seriously; it enters his lungs, and too often becomes the nucleus of disease. Professor Tyndall has shown by a beam of light what we inhale on the surface, but that is nothing to the mass of organic and inorganic particles met with in colliery roads and working places. By explosive action these become an actual portion of the underground atmosphere, and the result is too often most painful suffering and death.

As regards ventilating operations, the fresh air goes down a shaft called the "Newbury pit," and after straggling, and, indeed, struggling, through narrow roadways, finds its exit at and up the "Mackintosh pit," where there is a furnace for the purpose of producing a movement of the air by rarefaction. The surface distance between these two points I am unable correctly to state, as I possess no general map of the property; but I should think the travel of the air underground from one shaft to the other will approach eight hundred yards, or perhaps even half a mile. Certain "branches" or stone drifts, across the "measures," exist, and were, at the time of the explosion, progressing; but no coal is wrought, that I am aware of, until near the bottom of the "staple," where a certain small quantity is excavated; there in fact, and in the furnace heading at the top of the said "staple," were to be found the coal getting places in the Newbury Colliery, and about a couple of hundred yards would embrace the entire site of their exploitations; it is evident enough, therefore, that there was not much going on, indeed it may be fairly said that the actual working places were really insignificant in extent. But the worst of it was that those very working places were in an anomalous condition as regards locality, being positively situated in the last of the "returns." Those returns themselves, and all the other wind ways of the pit, were not, in my opinion, large enough for the free passage of air. It would appear then that the dilemma of the viewer was one of two most serious alternatives: the coal was fiery, and if he sent the air in at a low rate of

speed, he would not get enough of it to "dilute and render harmless the noxious gas;" on the contrary, if by the application of considerable furnace power he produced a rapid travel of the air, he would incur the liability of passing flame through the reticulated lamp cylinders, and we have every reason to believe that this contingency actually occurred.

A condensed statement of what I said at the inquest when under examination and cross-examination will possibly be clearer than any description I can give from recollection alone:—

"I went down the Mackintosh pit on Sunday, and remained below until midnight; and I again went down on Monday. In my opinion it is not far from where Gunning was employed, and about there alone that we must look for the site of the explosion. When examining that place on Sunday night, I found a coal face of about seven feet in width and 18 feet in beyond the brattice. But the next day when I was in the same place I was informed by Hamblin (the under bailiff), that before the disaster this brattice cloth was only 13 feet back, and that the explosion had stripped off the other 5 feet. But there was even then space enough for many cubic feet of carburetted hydrogen. I myself found a certain amount of gas there on both occasions; quite enough to have brought about very grave results indeed, if we had fired it. Some of the witnesses have sworn that they discovered it previous to the explosion, and this accumulation would then be in contravention of the law. On the morning of the explosion it is probable that there was a quantity which when mixed with certain well known volumes of atmospheric air would amount to a very imposing force indeed; and the mischief would be greater by being fired in a narrow and confined place like the furnace level. Had there been ample room for expansion, the poor sufferers might possibly have escaped with their lives, though many of them would certainly have been very badly burned. After-damp also is more fatal to life in contracted spaces than in wide openings. With the very restricted sectional area in the level in question the results of the explosion became disastrous. Besides Gunning's place, there was another excavation lower down, where Curtis worked; this coal face was also 9 or 10 feet beyond its windway, and there again I detected fire-damp. This opening likewise was sufficiently spacious to contain a considerable quantity of gas; indeed it had been observed by witnesses before the explosion. This also establishes the fact of illegal accumulation of fire-damp. Again, in a coal face near the bottom of the "staple," fire-damp was found on Monday when we were all exploring together, but we have no evidence that it was met with in that particular place before the explosion. However, it all tends to show that gas is continually oozing out from the coal, and that they should never neglect to brattice the working places as close to the face as even to be inconvenient to the workmen.

I will now point out how the pit could have been fired in the absence of unprotected flame, premising that it was mainly the gas from Gunning's stall that perpetrated the disaster. I find by calculation that in order to pass 9,000 cubic feet of air per minute (the stated usual quantity) through the narrow furnace level, it must actually travel at the rate of $7\frac{1}{2}$ feet per second, which is rather a trying velocity for a Davy lamp. And if workmen were walking down the said level with lamps in their hands against this sharp ascending current at such a speed as to raise the aggregate velocity to nine feet per second, then if the current were foul there would be imminent danger of passing the flame through the gauze.

"Several of the witnesses testified to seeing gas in different places before the explosion, but one of them 'did not think it of much account.' It really requires long experience and no small amount of scientific knowledge, to say what is the limit between 'not of much account' and positive danger and death; a small quantity of gas will bring about a large amount of destruction, especially in places of insignificant dimensions.

"The first general rule was not obeyed, in my opinion, inasmuch as there was not a sufficient steady volume of air to prevent an accumulation of gas firing in a working place or in a travelling road; in fact there was not sufficient dilution to comply with the word and spirit of the law, or, which comes to the same thing, that air was not directed close enough to the faces to render harmless a noxious gas, by diluting and constantly sweeping it away.

"The question (asked) is an important one. If the gas had been seen by a fireman or any person deputed to act in that capacity, the men would have been prevented from descending the pit until it was cleared away by fresh air.

"The sixth special rule at first sight appears obscure, whereas it is really not so; and even if it were, the 7th, 8th, and 9th rules are imperative. But none of them have been obeyed, and no person has carried into effect those operations which would realize

the requirements of the 8th rule, ' that the overmen shall see the deputies every morning after they have been around the workings, and receive their report before the workmen commence to go down.'

" The circumstance that the coal workings are situated in the last of the air is remarkable ; the coal is worked at the very end of a long travel of the wind, wind that has had to pass through narrow roads for very many hundreds of yards.

" The gas comes off freely from the seam at present in work, and it is exceedingly quick to ignite. It ought therefore to have been so closely bratticed as to sweep all that was generated right into the main returns, and so up the dumb drift.

" Certain rules have been violated, those regulating examination. If they had been obeyed, then most likely all those lives that are lost would have been saved. If the evidence is to be relied upon as to the curtain (canvass door) being tucked up (that is, left open), then it is not difficult to account for the explosion. This shows what a dreadful result has attended disobedience of the law. There ought to have been a second curtain or door. It will be replied, that there was no room for another ; that between the entrance to Gunning's stall and its windway outlet there were not many feet ; but I insist upon it that there was space sufficient, especially as no horses work in that level. A second door should have been put up, whether it was inconvenient to the workmen or not. The use of a second door is, that in passing through one it is shut before the second is opened. This is a well-known and constantly practiced operation in collieries. If in travelling along a level a man finds one of these doors open, it excites his suspicion ; if he finds both open, he then knows that something is dangerously wrong, and that an unlawful act has been committed. We have it in evidence that the curtain (the door) was rendered absolutely inefficient by being tucked up (left open) on the morning of the explosion, in such manner indeed that the air was diverted from its proper channel, and moreover it is fully proved that there was no examination as required by law. This greatly simplifies the whole inquiry, and justifies my remark at the last meeting, that all those rules (of examination) had been broken. There was actually a monstrous proposition carried into effect for two or three weeks, that the pit should only be examined on a Monday. If there had been a common examination on the morning of October the 22nd, before the men went down, the explosion would have been in all probability prevented. A speed of $7\frac{1}{2}$ feet per second is not better in this pit for ventilation than six feet, because, in supplying a condition of safety, it, supplies also a condition of danger, that of passing the flame through the lamp gauze. A velocity of $7\frac{1}{2}$ feet per second would clear the pit of gas quicker than six feet, but it might fire it. The curtain, if a good one, was properly devised. The old Act of Parliament, which provided that a copy of the rules should be given to every man and boy, has been repealed, and I cannot help regretting that this useful proviso was not introduced into the present measure ; it was clear, simple, and effective." (Such was my evidence).

The result of the inquiry was that a verdict of manslaughter was returned against William Baker, Abraham Hamblin, and John Bainton. The Somersetshire spring assize will this year be held at Taunton.

The above evidence was necessarily desultory, it could not be otherwise, but it established the facts, and that was all that was required.

The mode in which the gas got all at once out from Gunning's stall into the furnace level was, that as the men were streaming down under the curtain that was so fatally rolled up, their very bodies became as it were an intercepting substance or door, and so turned the wind up into that working place, and puffed the gas out into the main road, where the next man coming down met it, and fired it with his lamp ; that was the conclusion I arrived at, for the slightest undulation of air would be sufficient to move it (the gas), and it would be done in a few moments, in consequence of the doorway being so small and so easily filled up by persons passing through.

If now the discipline had been thorough, the door shut as it ought to have been, and Gunning's working place closely bratticed, that is to say, if everything was in its proper and normal condition, the gas would still have got into the furnace level ; that in fact was its natural route ; but then it would simply have got there in imperceptible quantities, just in fact as it eliminated itself from the coal, and so would have mixed up with the air in the level, and have passed away up the dumb drift. The true reason of the disaster was a considerable *accumulation* of gas suddenly dislodged in the manner above described, and not the mere harmless passing away of fire-damp as it was formed.

It will be seen from all that has been said that the leading defect of the colliery was, that the air passages were of a size much too limited for free ventilation.

With regard to sectional areas generally, and other circumstances connected with the transmission of air underground, really the natural laws that relate to them are by no

means difficult of comprehension. But we are all apt to guide ourselves by local conditions, such as height of seam, the sort of roof we possess, the resistible strength of the hill or floor, and so on, indeed to a certain extent we are bound to be so guided, nevertheless it is an absolute condition that fiery mines shall positively and actually be provided with ample and roomy passages. I am occasionally invited to look at road and airways that are stated to be quite sufficient, but which on inspection I do not by any manner of means find to be equal to my own idea of requisite size. Unless underground roads correspond in dimensions with the duty the wind is expected to perform, disasters will never cease. An abundant supply of fresh air judiciously distributed is the sine qua non for dangerous seams of coal, and that is pretty well all we know on the subject; but without great sectional area we cannot get this "abundant supply" into the far end or back of our works, and in that case our knowledge, whatever it may amount to, is all in vain. Scant ventilation affects not only the people, but the poor animals also, in hot badly aired collieries the horses suffer positive torture. In such ill-conditioned mines every possible cubic foot of wind that can be produced is wanted in the working faces, and then the stables are not supplied with a sufficient scale of fresh air, and the horses, after leaving their labour, undergo in what should be their places of rest, quite as much misery as they did when they were dragging the trams after them in the ill-driven and badly ventilated roadways and stalls.

If the means could be provided in universities to impart scientific information to those who are intended for mining pursuits, then I think we should not so often meet with these narrow and tortuous passages underground; amplitude would become the rule, and not contraction. It is quite true that nothing can be done without practice and experience, but still with a higher order of education added we might expect great things indeed. Not to be familiar with the important physical laws that govern ventilation is a condition of ignorance that ought not to exist in this country.

In two previous reports I made mention of certain natural occurrences witnessed after the Autumnal Equinox in the years 1866, 1867, and 1868, and I suggested that as some of our annual groups of accident were coincident in time, that they might have relation the one with the other. The probability of any such sort of connexion may be very remote indeed, or really and truly it may not exist at all. Nevertheless this periodicity of earthquake, storm, and explosion in coal mines having again manifested itself in the fall of the year 1869, it becomes impossible that such recurring phenomena should escape observation and remark.

The investigations of the present century have, to a certain extent, taught us that during and after earthquake the undulation of land waves stretch far and wide. These may be said to be periods when the solid earth is thrilled through to vast distances from the centre of initial action. That this seismic energy in any way affects remote mining operations is a question only to be determined by future observation, spread over succeeding years, and there is no doubt but that patient investigation will be given to the subject. But, though we be affected, or not affected, by annual vibratory action and hurricane, it is still best for us, and the only true approach to safety, to keep our collieries surcharged with such supplies of fresh air as will "mix up with and render harmless" any amount of gases that may be met with from any cause or influence, whether inherent in the coal, or in the locality of the mine, or even in consequence of disturbances as far distant as the tropical belt itself.

Continuing with the "death list" in the due order of its columns, I have now to speak of "falls of coal and stone." By this most serious of all the causes of destruction underground my district lost 37 persons in the year now reported on; this, happily, is less fatal than in 1868. But, though the record is comparatively small, 37 is still a serious number, especially when it is unceasing in its recurrence, for, taking into account all the great mining centres of this country, there is not a day without a death by falls of material underground. So many skilled workmen thus killed is a mournful bereavement to each family, and a serious loss to the industry of the nation. I repeat my recommendation to timber up, even if the need of props is not apparent to the sight.

The third place in the fatal accident list is dedicated to "pit shafts;" but I rejoice to say that as far as coal is concerned it was a blank column altogether in 1869, not a single notice of death having been received by me in all the entire year, though, certainly, in ironstone mines, as I shall presently have to report, two deaths occurred.

With regard to a certain class of accident in "shafts," that of the breaking of ropes, and the consequent use of safety apparatus, it occasionally happens that inquiries reach me on the subject, and my general reply is to the effect that I hesitate to praise one invention more than another; however, I never fail to recommend abundant boiler room, winding engines with surplusage of power, with practical and well-conducted engine men

to work them. Thus, the owners can construct drums of considerable strength and diameter, enabling them to use wire ropes of ample dimensions, whether round or flat. To arrive at those advantages it becomes a matter of course that the pits should be of sufficient size, be strongly walled from top to bottom, and be provided with suitable guides securely fixed. Such provisions as these will be found to prevent accidents by rope breaking to a great extent, and so keep down the death-rate in the third column of the inspectors lists. Against prevention of accident by the use of patented machinery I offer no word whatever; on the contrary, indeed, I willingly add my testimony to that of others in favour of the ingenious contrivances displayed in those inventions; but I must observe that the substitution of safety apparatus for strong efficient tackle is by no means true economy.

"Miscellaneous underground" is the next column, though it contains but one entry that needs comment; it is that of a man killed in the Parkfield Colliery by the premature explosion of a shot. It would appear that in applying his candle to the "squib" he must have missed it, and instead have ignited the charge itself; but as he was killed on the spot we could only arrive at after conclusions on the subject. Any how there was evidence of want of dexterity in managing this particular shot, and I merely introduce the subject in order to recommend more care in blasting, more perfect fuses, the use of copper prickers, and above all the employment of experienced men in powder work. It is a cruel thing to order men to use powder who are not practical in blasting operations. In both fatal and not fatal notices it is astonishing to read of the accidents that occur by unskilful manipulation in powder work. It would really appear that further legal regulations are already required to contain these careless and ceaseless practices. As to the storing of undue quantities of gunpowder underground, it is most reprehensible, and the more so because unnecessary. It would be a step forward in the cause of humanity to prohibit the use of this dangerous compound altogether in mines that freely give off fire damp.

The last column of all belongs to the surface, and one of its entries I must here introduce. In my last report I felt it cause for congratulation that for many years past no life had been lost in my district by boiler explosion. I regret, however, to say that 1869 did not pass over without a melancholy instance of that class of casualty.

On the 19th of July a boiler blew up at the Cwm-y-glo Colliery in Monmouthshire, whereby one poor fellow was subjected to most dreadful suffering and death.

It appeared in evidence that there existed but little mechanical engineering ability at the colliery, and the coroner and jury considered that the man had lost his life in consequence of that absence of skill, and the end was that they returned a verdict of manslaughter against the managing director of the company, and also against the viewer of the colliery, both of whom, accordingly, will have to make their appearance at the Monmouth assizes now about to be held in that town.

As regards the non-fatal accidents in coal mines during the year, they also, as well as the fatal occurrences, were more numerous than in 1868; however the excess is by no means considerable.

I will now briefly report on iron mines, and then supply a résumé of all the casualties that occurred in the two departments of the district, that is to say, both in the coal and in the ironstone mines throughout the whole of the year 1869. Certainly in this, the latter of the two, I can make a much more satisfactory statement than I was able to do in my report of last year, for now not more than eight persons lost their lives in the pursuit of their calling, whereas in 1868 double that number were killed, and yet quite as much (if not more) of the mineral was brought to bank in the year I am now reporting on. 21 separate non-fatal accidents also occurred, causing injury to 22 men and boys, which is much about the same number that were hurt in 1868.

In addition to all the above records, seven other events took place which the lists cannot find room for. I herewith insert them in the order of their dates.

On the 13th of March Thomas Harris died from natural causes in his "stall" in the Sirhowy works. This death, of course cannot be put in the list.

On the 20th of April, Samuel Iscaer, after leaving his work in the Hope Colliery, endeavoured to pass some trucks on the public line of railway, and got so crushed against a wall that he died the next day. This, perhaps, may be a matter for one of the railway inspectors. It cannot be classed as a mining accident.

On the 28th of July, David Williams, a child six years of age, got killed near Beaufort whilst at play; he was attempting to ride on a loaded tram.

On the 11th of August James Brain was killed on a branch forest railway near the Nelson pit by crush of loaded truck. This also I presume would be a matter for the inspectors of railways.

On the 4th of September a person (or rather a skeleton) was found at the bottom of an old air pit belonging to the Nantyglo works. This pit was protected by being enclosed in a warm locked house or hut. The body must have been there for a year or more, and judging by the clothes and shoes it did not appear likely that he was a miner. The lock attached to the door of this hovel has many times been found forced, and as the place is situated on the mountain pathway between two large populations (Brynmawr and Blaenavon), there can be but little doubt that the poor creature was a tramp, and had gone into the hut to sleep, and so fell down the pit.

On the 25th of October, William Coleman fell out of a coal truck on the public railway near the Crumpmeadow Colliery, and was killed.

On the 30th of December, George Holmes, the banksman at the Wigpool iron mines in the Forest of Dean, fell down a pit of 115 yards in depth, and was instantly killed. The Wigpool mine has for its matrix the carboniferous limestone, therefore the Act of Parliament does not apply to it; geologically speaking, it is cut off from inspection.

The net return then of the double district will be as follows:

Separate fatal accidents in coal mines, 51, deaths therefrom, 68; non-fatal in coal mines, 111, inflicting injury on 125; fatal accidents in ironstone mines, 8, consequent deaths, 8; non-fatal in ironstone mines, 21, causing hurt to 22 persons; casualties from which the lists are free, 7, bringing about 7 deaths. Total, 198 separate reported accidents, affecting 230 persons, of whom 83 were deprived of life, and 147 underwent much suffering, either by fracture or contusion, or burns, or surgical operations.

Touching education amongst the miners of the district, I can only remark, that if there really is any advance it is but dimly discernable, and the idea forces itself on my mind that it will not be otherwise until tuition in some mode or other is rendered decidedly compulsory.

I have, &c.

(Signed) LIONEL BROUGH,
Inspector of Mines.

To the Right Hon. Henry Austin Bruce, M.P.,
Secretary of State for the Home Department,
&c. &c. &c.

REPORTS OF INSPECTORS OF MINES.

List of the FATAL COLLIERY ACCIDENTS, and Loss of LIFE arising therefrom, in the SOUTH-WESTERN DISTRICT, during the Year ending the 31st of December 1869.

Date.	No. of Accidents.	Name of Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	Number of Lives lost.					
									Explosions.	Falls of Coal and Roof.	In Sharts.	Miscellaneous.	Above ground.	
1868.														
Jan. 7	1	Risca Blackvein	Monmouthshire	Thomas William Rhodes -	David Daniel	Collier	- 30	Fall of stone on the 7th January; died on the 20th.	-	1	-	-	-	
," 9	2	Trafalgar	Forest of Dean -	Cornelius Brain and Sons	James Cole -	Collier	- 40	Fall of stone (Bell) on the 9th; died on the 30th.	-	1	-	-	-	
," 16	3	Bryn Level	Breconshire -	J. and C. Bailey -	James Russell -	Collier	- 17	Fall of roof lying over the yard coal -	-	1	-	-	-	
," 21	4	Ebbw Vale	Monmouthshire -	Ebbw Vale Co., Limited -	Thomas Hillman -	Collier	- 24	Fall of stone (disengaged by concealed "slip") in the Vydylog coal workings in No. 9 pit.	-	1	-	-	-	
," 22	5	Do.	-	Do.	Joseph Tiley -	Collier	- 34	Fall of clof in face of stall in No. 19 pit. The clof forced him on to the sharp picks, which penetrated the skull, and killed him instantly.	-	1	-	-	-	
," 25	6	Mells	-	Somersetshire -	Vobster Colliery Company	John Hamblin -	Collier	- 26	Fall of piece of roof between "slips" -	-	1	-	-	-
," 27	7	Abersychan	-	Monmouthshire	Ebbw Vale Co., Limited -	John Prosser -	Collier	- 48	Explosion of fire-damp in the "three-quarter coal" in the Cwmsychan pit on the 27th; Prosser died on the 7th of February and Weeks on the 11th.	2	-	-	-	-
Feb. 18	8	Tredgar	-	Do. -	Tredegar Iron Company -	Thomas Monkley -	Collier	- 41	Fall of roof of "yard coal" in the No. 6 pit; brought about by an unperceived joint.	-	1	-	-	-
," 22	9	Dean Lane	-	Somersetshire -	Henry Bennett -	-	Collier	- 45	Explosion of fire-damp on the 22nd, died on the 23rd.	1	-	-	-	-
," 24	10	Tredgar	-	Monmouthshire	Tredegar Iron Company -	David Davis -	Collier	- 18	Fall from the old coal in No. 7 pit	-	1	-	-	-
									Carried forward	-	8	-	-	-

List of Fatal Colliery Accidents—continued.

Date.	No. of Accidents.	Name of Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	Number of Lives lost.	
									Explosions.	Falls of Coal and Roof.
1868. Feb. 27	11	Risca Blackvein	Monmouthshire	Thos. Wm. Rhodes	Francis Hemmings	Collier	24	Brought forward Fall of coal on 27th February ; died on the 9th April.	3	8
" " 12	Do.	-	Do.	-	Thomas Watkins	Collier	65	Fall of coal on the 27th February ; died on the 13th March.	-	1
Mar. 4	13	Rhoswen	-	Do.	David Jones	Collier	28	Fall of coal and stone -	-	1
" " 14	Nantyglo	-	Do.	-	William Lewis	Collier	35	Explosion of gas on the 17th ; died on the 18th.	1	-
" " 15	New Bedwelly	-	Do.	-	Tredegar Iron Company	John Jones	20	Fall of "big vein coal" by a "slip" -	-	1
" " 16	Cwmbran	-	Do.	-	John Lawrence	Charles Powell	14	Entanglement in wheel of upper incline	-	1
April 9	17	Tyr Phil	Glamorganshire	Rhymney Iron Company	Richard Rees	Collier	29	Fall of "bell" in the Brithdir vein on the 9th ; died on the 14th.	-	1
" " 18	Ty Trist	-	Monmouthshire	Tredegar Iron Company	John Wines	Collier	41	Fall of "4 coal" on the the 10th ; died on the 11th.	-	1
" " 19	New Cwm Dows	-	Do.	Martin Morrison	Thos. D. Morgan	Collier	35	Fall of roof in the "rippings" -	-	1
" " 20	Blaenavon	-	Do.	Blaenavon Iron Company	John Watkins	Collier	18	Fall of coal in "garn pit" (drawing pillar)	-	1
May 1	21	Vobster	-	Vobster and Mells Company	George Denning	Collier	22	Fall of coal in "breach pit;" concealed "slip."	-	1
" " 22	Ty Trist	-	Monmouthshire	Tredegar Iron Company	Elijah Reed	Collier	46	Fall of stone and rubbish whilst drawing timber.	-	1
" " 23	Cwmnantddu	-	Do.	Ebbw Vale Co., Limited	Seven Persons killed by Explosion of fire damp		-	7	-	1
					Carried over		-	11	18	-

List of Fatal Colliery Accidents—continued.

Date.	No. of Accidents.	Name of Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.			Number of Lives lost.
								Explosions.	Pulls of Coal and Roof.	In Shuts.	
1869. May 26	24	Hopewell	-	Forest of Dean - Somersetshire - Monmouthshire - Do.	Western Counties Colliery William Evans and Co. Tredegar Iron Co. Bedwas Co., Limited Thos. Wm. Rhodes Countess of Waldegrave Tredegar Iron Company Henry Crawshay	James Thomas Charles Hill Evan Griffiths Henry Leah James Hamm Henry Bourne Obadiah Lovell James Lucas	Collier Collier Collier Stoker Collier Collier Collier Collier	55	Brought forward Fall of coal in his stall	-	11 18
June 3	25	Downside	-	Do.	-	-	-	-	-	-	1
July 17	26	Tredgar	-	Do.	-	-	-	-	-	-	1
” 19	27	Cwmyglo	-	Do.	-	-	-	-	-	-	1
” 26	28	Risca, Blackvein	-	Somersetshire - Monmouthshire - Forest of Dean -	-	-	-	-	-	-	1
” 30	29	Tynings	-	-	-	-	-	-	-	-	1
Aug. 9	30	Tredpar	-	-	-	-	-	-	-	-	1
” 10	31	Lightmoor	-	-	-	-	-	-	-	-	1
” 11	32	Tilery Level	-	Monmouthshire -	South Wales Colliery Co., Limited.	Abrm. Owens	Collier	15	Fall of rock in stall	-	1
Sept. 1	33	Risca Blackvein	Do.	Do.	Thos. Wm. Rhodes	William Dix	Collier	49	Fall of coal in “big vein”	-	1
” 4	34	Ebbw Vale	”	Do.	Ebbw Vale Co., Limited	James Jones	Timberman	55	Fall of stone in No 15 pit	-	1
” 4	35	Ebbw Vale	-	Do.	Ebbw Vale Co., Limited	Joseph Hill	Collier	29	Fall of stone on the 4th; died on the 18th.	-	1
” 27	36	Trafalgar	-	Forest of Dean -	C. Brain and Sons	John Williams	Collier	38	Fall of stone on the 27th September; died the 27th November.	-	1
” 28	37	Nantyglo	-	Monmouthshire - Do.	J. & C. Bailey	James Clark	Collier	22	Fall of roof over “yard coal”	-	1
Oct. 2	38	Do.	-	Do.	J. & C. Bailey	John Leek	Collier	28	Explosion of fire damp	-	1
” 13	39	Ty Tryst	-	Do.	Tredegar Iron Co.	Wm. Southway	Haulier	18	Crush between trams and “rib”	-	1
” 22	40	Newbury	-	Somersetshire -	Westbury Iron Co.	Eleven persons killed by explosion of fire-damp		11	Hurt at the coke ovens by the “drag”	-	1
Nov. 6	41	Abercarn	-	Monmouthshire -	Ebbw Vale Co., Limited	James Sutton	Coker	39	on the 6th; died on the 7th.	-	1
” 10	42	Crumpmeadow	-	Forest of Dean - Do.	Goold & Co.	Joseph Thomas	Collier	13	Fall of roof	-	1
” 11	43	Do.	-	Do.	Goold & Co.	James Gladwin	Collier	40	Fall of roof on the 11th; died on the 24th.	-	1
” ”	44	New Bedwelly	-	Monmouthshire - Do.	Tredegar Iron Co.	Henry Morgan	Wasteman	52	Fall of stone in “rippings”	-	1
” ”	45	Ebbw Vale	-	Gloucestershire -	Ebbw Vale Co., Limited	James Jones	Collier	14	Fall of “bell” in No. 9 pit	-	1
Dec. 6	46	Parfield	-	Monmouthshire -	Wethereds & Coplham	James Taylor	Collier	62	Premature explosion of shot	-	1
” 8	47	Ebbw Vale	-	-	Ebbw Vale Co., Limited	John Jones	Collier	18	Fall of coal in No. 15 pit	-	1
									Carried over	-	2
										23	36
											8

List of Fatal Colliery Accidents—continued.

Date.	No. of Accidents	Name of Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.				Number of Lives lost.
								Explosions.	Pails of Coal and Roof.	In Sheds.	Miscellaneous.	
1869. Dec. 14	48	Pantglas	-	Monmouthshire	Thomas Morgan	Jacob Thomas	-	Brought forward	-	-	-	3
," 16	49	Blaina	-	Do.	Blaina Iron Co.	John Hancock	-	Overpowered by a train on a road which was far too steep.	-	-	-	2
," 24	50	Bargoed	-	Glamorganshire	Bargoed Co., Limited	Geo Williams	-	Fall of "bell" from roof in road	-	-	-	1
," "	51	Tyr Phil	-	Do.	Rhymney Iron Company	David Thomas	-	Scalded by escape of steam from the pipes of a donkey engine underground on the 24th December; died on the 25th.	-	-	-	1
						Collier	-	Entangled in the mechanical haulage underground on the 24th; died on the 26th.	-	-	-	1
						Collier	-					3
								Total	-	-	-	3

List of Fatal Colliery Accidents—continued.

RECAPITULATION.

Total number of separate fatal accidents reported in coal mines in the year 1869 51
Total number of persons killed by those separate 51 accidents - - - 68

Whereof 23 deaths were occasioned by explosion of fire-damp.
" 37 deaths were brought about by falls of coal and stone.
" 5 deaths arose from miscellaneous causes underground.
" 3 deaths happened on the surface.

Total - 68 deaths, as enumerated and described in the List.

COMPARATIVE TABLE OF THE LAST FOUR YEARS.

In 1866, 6 persons lost their lives by explosion of fire-damp ; whilst, during the whole of the same year, the total number of deaths from all causes amounted to

amounted to - 81
 " 1867, 6 " " " " " " 71
 " 1868, 1 " " " " " " 61
 " 1869, 23 " " " " " " 68

REPORTED NON-FATAL ACCIDENTS IN COAL MINES THROUGHOUT 1869 = 111.

These 111 occurrences were attended with injury to the persons employed in the district in manner as tabulated below :—

There were 7 accidents by fire-damp,				whereby 18 men and boys were burned, contused, or suffered fracture of bone.			
„	„	60	„	by falls of coal and stone,	„	60	„
„	„	9	„	in pit shafts,	„	10	„
„	„	27	„	from miscellaneous causes, underground	„	31	„
„	„	5	„	occurred on surface,	„	6	„
111 accidents,				125 persons were more or less injured.			

Some of the above may have already returned to their labour; many still suffer; others again, probably, will not be able to pursue their avocations for a long time yet to come.

**LIONEL BROUH,
Inspector of the Collieries of the District.**

List of the FATAL and NON-FATAL IRONSTONE MINE ACCIDENTS, and Loss of LIFE arising therefrom, in the SOUTH-WESTERN District, during the Year ended the 31st December 1869.

Date.	Name of Mine.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	Number of Lives lost.			
								Explosions.	Falls of Roof and Ground.	In Shafts.	Miscellaneous.
1861.											
Feb. 20	1 Hanham	Gloucestershire -	J. J. Whittuck	-	Miner	-	Fall of ground overhead	-	-	-	-
Apr. 3	2 Bute	Glamorganshire	Rhymney Iron Co.	-	Labourer	-	Crush of tram on surface on the 3rd of April; died on the 6th.	-	-	-	1
June 15	3 Varteg Hill	Monmouthshire	Jno. Vipond & Co. (Limited).	Thos. Sides	Haulier	-	Crush of trams	-	-	-	1
" 17	4 Beaufort	Do.	J. & C. Bailey	-	David Richards	-	Stone rolled from gob in the Bwlch-y-garn pit.	-	-	-	-
July 15	5 Ebbw Vale	Do.	Ebbw Vale Co, Limited	Joseph Lott	Miner	-	Fall of ground in "black pins" iron-stone mine workings.	-	-	-	-
Oct. 7	6 Glynos	Do.	William Richards	John Lacey	Miner	-	Fall of roof on the 7th; died on the 11th.	-	-	-	-
Dec. 6	7 Pidwall	Glamorganshire	Rhymney Iron Co.	Thos. Daniel	Miner	-	Fell out of cage whilst descending	-	-	1	-
" 30	8 No. 3 Pit	Breconshire	Tredegar Iron Co.	Ebenezer Williams	Miner	-	Fell away from ladder, whilst descending	-	-	1	-
								Total	-	-	1

List of Fatal Accidents in Ironstone Mines—*continued.*

RECAPITULATION.

Total number of separate accidents in ironstone mines reported in the year 1869	-	8
Total number of persons killed by those 8 separate reported accidents	-	8
Whereof 4 deaths were occasioned by falls of stone.		
,, 2 took place in pit shafts.		
,, 1 arose from miscellaneous causes underground.		
,, 1 occurred on the surface.		
8 deaths, as enumerated and described in the List.		

COMPARATIVE VIEW OF THE LAST FOUR YEARS.

In 1866, the total number who lost their lives from every cause, amounted to	-	14
,, 1867, ,, ,, ,, ,, ,,	-	14
,, 1868, ,, ,, ,, ,, ,,	-	16
,, 1869, ,, ,, ,, ,, ,,	-	8

LIST OF THE NON-FATAL ACCIDENTS.

1 explosion of fire-damp,	whereby 1 person was severely burned.
12 falls of stone and ironstone,	,, 13 men and boys were injured.
1 shaft accident	,, 1 person was thrown off work.
3 accidents by miscellaneous causes underground	,, 3 persons were badly hurt.
4 surface accidents	,, 4 persons were severely injured.
<u>21 accidents, occasioning serious bodily harm to</u>	<u>22 men and boys.</u>

LIONEL BROUH,
Inspector of the Ironstone Mines of the District.

Mr. Baker's Report.

REPORT on the INSPECTION of MINES in the SOUTH STAFFORDSHIRE AND WORCESTERSHIRE DISTRICT, for the Year ended the 31st December 1869.—By JAMES P. BAKER.

SIR,

Wolverhampton, February 28th, 1870.

In conformity with the statute I have again the honour to transmit my Report on the Inspection of Mines in the South Staffordshire and Worcestershire division, together with a "list" of the fatal accidents which have occurred during the past year, and which, I regret to have to say, exhibits no diminution in the loss of life in coal mines as compared with the list of 1868, the deaths of that year being identical in number with those of 1869, when they reached 104, which, however, (in comparison with the number given in my previous reports,) still shows decline. Moreover, I think it worthy of remark to be able to state that the annual average loss of life of the 10 years ended 1860 was 162·5, and that of the 9 years to 1869 inclusive 110·8, which, for the period last named, clearly shows a diminution of about 52 per annum. This conventional practice may probably appear unnecessary. However, I have in this, as in former reports, brought forward these statistics in order to show the working of the various Acts of Parliament in this inspection district, which I have always considered desirable, and never more so than now, particularly as it has been and still is asserted by some persons, that the working of the present Inspection Acts and the mode of inspection have for the most part failed. Therefore, and especially in the face of such assertions, I am still of opinion that these annual comparisons are not only valuable and necessary in themselves, but also save a large amount of unnecessary trouble in referring to the reports of by-gone times.

Whilst there has been no decrease in the number of lives lost during the year 1869, there has, however, been an increase of about five per cent. in the amount of coal got. The confidential returns of the coal trade, together with the amount of waste, colliers' monthly allowance coal, and the colliery consumption (which I estimate for the past year at 1,350,000 tons), enables me, after making an addition of about 20 per cent. for the difference between the long and boat gauge weights and statute weight, to return 10,408,000 tons of 2,240 lbs. On this subject much might be said, but as it belongs entirely to the proprietors of the mines, it may be well to leave the matter in their own hands, which ere long will doubtless be more satisfactorily adjusted. In fact several proprietors have already commenced weighing their coal into boats, and a general indexing of all the boats travelling on the Birmingham Canal is now talked of, and the canal company are, it is stated, going to Parliament this session for the necessary powers. In the event of which, or a general system of weighing, I shall be able to make my return conformable with the commercial weight of the district. I may state, however, that my addition to the present commercial or ticket book weight could, if it were prudent, be supported by an overwhelming amount of unquestionable evidence.

Annual average loss of life from 1850 to 1860 and from 1860 to 1869 inclusive.

Quantity of coal raised.

Convictions for Violations of the Law and Special Rules thereunder.

Proceedings have with your sanction been instituted against the following persons during the year, for their respective violations of the various Acts of Parliament and special rules.

	£ s. d.
Messrs. Burrows, owners of the Park Hall Colliery, neglect to establish special rules, 1s. and the costs	0 1 0
J. Follows, owner of part of the Riddings Colliery, for violation of general rule 4 (insecurely fenced pit), into which a man fell, and was seriously injured, 20l. and costs	20 0 0

which amount, owing to his poverty, he could not pay, and was committed to gaol for three months, which, however, has not, as yet, been carried out, in consequence of his indisposition. I may also add, that this is the second case against Follows, on both of which he stands committed to gaol.

	£ s. d.
Mr. T. H. Pemberton, part owner of the Riddings Colliery, for violations of general rule 4	30 0 0
John Pearson, owner of the Stallings Colliery, violation of 13th general rule	5 0 0
Robert Berkeley, agent of the Cradley Park Colliery, violation of special rules	2 0 0
William Jackson, charter-master of the Ettingshall Colliery, violation of 5 & 6 Vict. Cap. 99	20 0 0
William Clark, charter-master of the Barn Farm Colliery, violation of the special rules. In this case no penalty was imposed, as the defendant, at the suggestion of the stipendiary magistrate, agreed to pay the injured man 50 <i>l.</i>	0 0 0
Farringdon Lane, owner of Meadows Colliery, violation of the 4th general rule; three cases	3 0 0
John Spittle, owner of the White's Farm Colliery, violation of general rule 14; two cases	20 0 0
John Lowe, agent of the Meadow Colliery, violation of general rule 4	1 0 0
Martin Baldwin, owner of the Wall Butts Colliery, violation of the 4th general rule	2 0 0
David Rose, owner of the Old Hill Colliery, neglect to establish special rules	5 0 0
George Bailey, deputy manager of the Tipton Moat Colliery, violation of special rules	2 0 0
Michael Grazebrook, owner of the Netherton Colliery, violation of the 13th and 14th general rules	4 0 0
William Turner, agent of the Netherton Colliery, violation of special rules; two cases	2 0 0
John Horton, Owner of the King's Hill Colliery, violation of the general rules 4, 12, and 13	2 0 0
Sir Horace St. Paul, Bart., owner of the Monway Colliery, violation of the 4th general rule	20 0 0
Thomas Follows, part owner of the Can Lane Colliery, violation of general rule 4	0 10 0
John Capper, agent of the New Cross Colliery, violation of the 14th general rule	0 10 0
Edward Holmes, owner or agent of the Claypit Lane Colliery, violation of general rule 4	10 0 0
William Munrow, agent of the Wyrley Town Colliery, violation of the 9th general rule, and special rules; three cases	7 0 0
Charles Arrowsmith, charter-master of the Hatherton Colliery, violation of special rules	1 0 0
Thomas Round, agent of the Buffery Colliery, violation of special rules	10 0 0
Benjamin Whitehouse, owner of the Ebenezer Colliery, violation of the 6th general rule	10 0 0
Thomas Page, agent of the Tipton Moat Colliery, violation of special rule	0 10 0
Thomas Mills, charter-master of the Tividale Hall Colliery, violation of special rule	2 0 0

Proceedings have also been instituted by the owners or agents of several collieries against their workmen for violations of the special rules, and convictions obtained. The penalties, if any, will doubtless be handed over at the proper time to the person authorized to receive them.

With regard to the number of persons who lost their lives in working the coal mines of this district during the past year, I have to state that 6 were the result of explosions of fire damp, 68 of falls of coal and roof, 22 are due to accidents in shafts, 6 to miscel-

laneous undergound, and 2 to accidents on the surface, making in all, as before stated, a sad total of 104, twenty-nine of which might, in my opinion, have been prevented.

As explosions of fire-damp take the lead in the first column of the list of fatal accidents, I will first of all refer to the deaths from that cause.

The loss of six miners by explosions of this class may, perhaps, be considered a small number, when the 28,500 work persons, who are distributed over about 350 working collieries, and their re-distribution in and about from two to three thousand distinct pits, is taken into account,—or, if comparison be made with most of the other mining districts, whether as to number of persons employed, number of collieries, and quantity of coal raised, it certainly compares favourably. Nevertheless, I feel it incumbent upon me to state that, in a district which is in truth non-fiery, the number (though small as it is) is by no means creditable to the management of the collieries, where the accidents which it is my painful duty to describe have happened. And these remarks not only apply to this but also to other classes of accidents recorded in the "list," to some of which I shall have occasion to refer more particularly hereafter.

The first fatal accident by explosion in the year 1869, number 8 in the list, took place at the Tibbington Colliery, which resulted in the death of two men. On the morning of the explosion, whilst the deputy was examining the workings previous to the colliers commencing work, Joseph Humphries (one of the deceased men), who, after being ordered by the deputy to await his return, rushed off to his place of work, and fired the gas, fatally burning himself and causing the immediate death of one of his fellow workmen. Happily few persons were in the pit at the time, otherwise the consequences might have been fearful. The man Humphries died a few days after the occurrence, the sad result of his own disobedience. Where such recklessness and bad discipline as this exists, nobody can wonder how explosions more or less fatal often happen. To have Bad discipline. working men under no better control goes very far to show the general character of the management of the colliery.

The next explosion to which I consider it necessary to call attention happened at the Ebenezer colliery on the 16th October last, causing the death of S. Davies. It happened that on the night before the explosion the deceased and a "boy" (who was slightly burned at the time) were sent to work in a headway, the end of which was then about eight feet beyond the air-course, and without provision of any kind for the ventilation of the working place. However, Davies commenced his work under these circumstances and all appears to have gone on well till he came out of the headway to fetch a sprag, which occupied about twenty minutes. On his return, fearing that gas might have accumulated during his absence, he left his candle behind in the headway, and took his flannel vest to fan it out towards the air-course, after which he went into his place of work, and fired the gas, injuring him so severely that he only lingered four days after the fatal blast. When the explosion occurred, the deceased had extended the length of the headway to about $4\frac{1}{2}$ yards beyond the air-course. This was clearly a violation of the first general rule, and another sad example of defective colliery management. The agent was, with your permission, subsequently charged with a violation of the law before the stipendiary magistrate at West Bromwich, to which he pleaded guilty, and was fined 20*l.* and costs. There are two more cases of explosion, Nos. 84 and 96, in the "list," which I think it will be well also briefly to explain.

The first of these cases happened at another pit in the same colliery as the last under review, and nearly at the same time. On the 17th of the same month (October) the night "deputy" who had the care of the underground operations went in the most thoughtless and reckless manner into an old gate road without his lamp, and fired a quantity of gas, which burnt him to such an extent that he died on the 11th day after the occurrence.

There were other men down the pit and near the deceased, who, however, fortunately escaped the fire. Such rash acts often spread destruction and death throughout a mine; and, if deputy managers are found guilty of conduct so reprehensible, it is no wonder that working men sometimes go on in contravention to all order and discipline.

The second occurred at the Spring Vale colliery on the 23rd December. This is a very similar case to the last. The deputy manager, S. Wynne, went to the pit as usual, descended at the proper time to examine the mine, and instead of taking his safety lamp (a duty enjoined by the special rules of the colliery), he hurried off into one of the headways with a candle, and coming into contact with some gas fired it upon himself, and thereby brought about his own destruction.

Therefore I have no hesitation in saying that these five lives have been sacrificed through bad underground management on the one hand, and thoughtless, if not reckless supervision, on the other.

Explosion caused by a reckless collier.

Bad discipline.

Ventilation of the mine neglected.

Infraction of the law and penalty imposed.

Reckless deputy manager.

Reckless deputy manager.

Falls of coal and roof.

Next in order in the "list" is the record of deaths from that worst and most destructive of all in my district, "falls of coal and roof," which, sad to relate, has cut off from the ranks during the year 1869 no fewer than 68 working miners.

Of these 68 fatalities, 26 were pikemen or hewers, many of whom have, through their own neglect to properly timber and sprag and spurn the coal, whilst holing, cutting, &c., brought upon themselves their own destruction.

No miners have such facilities for protecting their lives and limbs as these; yet, notwithstanding they frequently fall victims to their own indiscretion, by persisting to treat with indifference the most simple and ordinary precautions of safety, both as regards established regulations and the friendly advice of their fellow workmen.

Nos. 15, 19, 35, 47, and 52 in the "list" were the result of a sudden subsidence of the superincumbent strata (technically called a "bump"). When this phenomenon occurs in thick coal mining, the solid coal frequently yields to the pressure, and nobody can tell, when the sound is heard, what may happen. The workmen flee in all directions, to escape the falls, by which, however, they are often unfortunately struck, and die on the spot. In some cases they have no chance of escape, owing to the sudden and rapid descent of the coal, which sometimes falls in columnar masses from the face and pillars, and at other times from the roof and overhanging sides of the stalls. Pillars eight and 10 yards square are often seen yielding, and large blocks of coal splitting off, in various directions, owing to "slips" and superincumbent pressure. Besides this peculiarity, the entire seam is frequently so reticulated with smooth faced "slips," joints, and dislocations, that it is extremely difficult to prop with timber up to moderate heights. Therefore this 10-yard seam and mode of working is of all others attended with the greatest risk; and so long as thick coal mining of this character goes on the loss of human life, more or less, will I fear go on too, and in a much higher degree than in the workings of the thinner seams of coal; and this may to some extent be accounted for from the fact, that a very large proportion of the quantity of thick coal raised is actually worked beyond the safe and practical use of timber.

Protection by timber in some cases impossible.

The worst and most fatal accident which I have to record for the past year, No. 46 in the list, happened at one of the recently opened thick coal pits of the Princes' End colliery, belonging to the Barbors' Field Company, by which three persons were suddenly deprived of life.

On my examination of the pit, I found that about 70 or 80 tons of coal had fallen *en-masse*, completely filling the stall in which it occurred. The cause of the fall was clear, owing to the presence of a very treacherous and smooth-faced "slip," the position, inclination, and extent of which favoured the fall, inasmuch as it ran along the side of the pillar next the stall, and extended vertically through the entire thickness of the seam, inclining towards the centre of the excavation at an angle of about 10 degrees, severing the solid mass, which rendered this place unusually dangerous.

Judging, however, from the extraordinary character and position of the "slip," (though for a thick coal pit a moderate quantity of timber was in this instance used,) it is difficult to tell what amount, if any, of timber propping would, in case of a subsidence of the superincumbent strata, have prevented the fall of coal. Nothing short, I fear, of a solid timber packing, sufficient to cover nearly the whole area of the excavation.

I attended the inquest, and gave a description of the accident, and also an opinion that the mine had not been as judiciously worked, under the circumstances, as it might have been; an opinion in which the jury (after returning a verdict of accidental death) fully concurred. I may also add, that I found this newly opened part of this mine so extremely dangerous, from the causes just enumerated, that, after conferring with the agents of the lessor and the lessee, I recommended them to abandon the coal in that part of the mine rather than sacrifice the lives of their workpeople; a recommendation which I am pleased to have to state they immediately adopted. A humane and noble example, which others might in some cases probably do well to follow.

Not a few of the 68 lives have been lost whilst the sufferers were either removing timber props or breaking down masses of coal.

In these cases the coal suddenly and unexpectedly fell. The deputy managers themselves have in a case or two lost their lives by these sudden falls. The best judges are sometimes deceived as to the width and length of a fall of coal, which now and then extends beyond their calculation, and overwhelms them before they can escape.

To give a description of every individual case would be a repetition of what has again and again been said on this subject in former reports, and serve no useful purpose.

A brief description of the other cases will, however, be found on referring to the list itself.

Loss of Life in Shafts.

The casualties under this head number 22, which, like the explosions and falls of coal and roof, show no decline in the death-rate, as I have to record one more than the number due to this class of accident for the year previous. The increase in the three first columns, 3, 10, and 1, respectively, has kept up the number equal in amount with the figures of 1868, otherwise the decrease of 12 in the miscellaneous and two on the surface would have reduced the list of the killed to 90, one less than the number on record for the year 1865, when I certainly began to think that the time would never again arrive when it would require three figures to represent the loss of life in working the coal mines of this district. Time has, however, shown different results, as the annual average of the last four years has been 17 in excess of that number, therefore my hopes (though not without fears at the time) have not, I regret to say, once been realized. Yet, however, I do not despair, for, considering the various improvements still going on in the district, and the happy results that have and may be expected to accrue therefrom, there is much to encourage one to hope that the future of our mining history may be more creditable than the past. I have to call attention again to the painful fact, that of the 22 deaths in shafts four fell from the surface, all of which might have been prevented if the pits had been provided with wickets or the travelling fence. One of these, however, No. 36, was mainly due to the unfortunate man's own neglect.

How certain accidents might have been prevented.

Two, 21 and 24 in the list, fell out of the skip whilst ascending. These too might have been saved had they been provided with the safety chain.

Another case, accident No. 70. The deceased fell out of the cage whilst ascending. He complained of being unwell when he gave the signal to be drawn up the shaft, and before he had ascended more than half way he fell to the bottom, and instantly expired.

One man was killed through overwinding at the Reddall colliery, No. 27 in the list. The deputy manager and a man named Willetts were engaged doing repairs in the shaft, and when they had finished the work they signalled to be pulled up. The winding engine was immediately set in motion, and the two men reached the top of the shaft, and would have been safely landed if the engine-man had stopped the engine at the proper time and place, instead of which they were drawn up to the pulley of the head-gear, and both thrown out of the skip, precipitating the deputy down the shaft and Willets upon the bank. Had an expert banksman been at the pit waggon this life might nevertheless have been saved.

Loss of life through negligent engine man.

The machinery, which was all in good order, left the engine-man without excuse. The cause of this accident was fully investigated at the adjourned inquest, at the close of which the coroner summed up, and the jury, after half an hour's deliberation, returned a verdict of manslaughter against the engine-man. The bill of indictment was, however, ignored at the last Stafford Midsummer assizes.

The bill of indictment ignored.

Accident No. 11. In this case the deceased, whilst adjusting the band chain, accidentally fell into the shaft, and was of course killed.

No. 49 relates to an accident at one of the pits in the Neachells colliery, where the hooker-on was improperly standing in the bottom, under descending cage, and where he unfortunately remained till it reached him, and crushed him to death. More ample room below the cage supports would generally prevent such an accident as this.

A most distressing shaft accident happened at the Wyrley colliery pumping pit, No. 48 in the list, which resulted in the death of the engine man and his assistant. It appeared that on the day in question the two deceased men, with others, were engaged doing some repairs to the pump, and in order to get the rods and bucket up the pump trees attached the capstan chain to a portion of the winding gear, and then employed the engine to lift them, which was successfully accomplished.

To complete the work, the two unfortunate men had to descend the pumping pit, and the moment the engine began to lower them the machinery flew out of gear, precipitating them to the bottom, where their lifeless bodies were afterwards found. The great strain to which this part of the machinery had been subjected in lifting the rods, &c., loosened the holding down "bolts" and left it just sufficient in gear to put the drum in motion, which had scarcely made one revolution when it became detached, and caused the accident. An examination of the machinery by the engine-man himself would have discovered the derangement, and also the state of the timber on which the machinery

Loss of life through inattention to duty.

rested, which was by no means so sound as it ought to have been, and which in all probability contributed to the accident. The deceased engine man, however, had the machinery under his care at the time, and it was his plain duty, not only to examine but to stop the machinery, and make all necessary repairs. The neglect of which, though probably inadvertently, cost both him and his assistant their lives. No effort was made by the engine-man (son of deceased) to arrest the motion of the drum with the "break," which if he had it would have been useless, as it was found to be altogether inadequate, and at a time when it was of all other most needed. Had there been an adequate break attached to this machine, and timely applied, these two lives might have been saved.

The jury, however, after examining the machinery, &c., returned a verdict of accidental death.

An inadequate "break" is a violation of one of the general rules. I therefore, with your sanction, instituted proceedings against the agent which ultimately resulted in the imposition of a fine of 5*l.*, and costs, inflicted by the Willenhall Bench on the 4th October last.

Accidents No. 64, 69, and 89 were brought about by portion of the walling, &c. falling down the shaft whilst the deceased persons were ascending. 69 and 89 were both of an accidental character, but 64, which occurred at the Ebenezer colliery, was of the most discreditable kind, and reflects seriously on the management of the colliery, and, considering the circumstances, it was fortunate that one life only was lost. There were, however, several persons seriously injured, all of whom are now recovering.

On the day in question, the underground deputy perceived defects in the walling of the shaft, and at once called attention to it, requesting the banksman to inform the deputy manager "Grove" without delay, which request he at once carried into effect, but instead of "Grove" attending to it himself, he sent two men (sinkers) to examine it, who reported that a few "bricks" of the walling had fallen out, but did not consider it very dangerous, therefore the work was allowed to go on till between five and six o'clock in the evening, when two of the night workmen were requested to examine the shaft before the day men were allowed to ascend. These too, after stating that they had "pulled off all the loose bricks, &c" told the men they might venture to ascend, and most of them did safely reach the surface; but when the last band-full were ascending a quantity of bricks fell down the shaft, killing one man, and seriously injuring several others, the sad result of the deputy manager's neglect. Had he, as was his duty, examined the shaft, and suspended operations, and done the necessary repairs, this sad accident would never have been heard of. Another case exemplifying the character of colliery supervision in this district.

For this sad violation of the law the owner was, on your authority, afterwards summoned before Isaac Spooner, Esq., (stipendiary magistrate,) and fined 20*l.* and costs. Evidence, however, being tendered that the owner had previously given the parents of the deceased 10*l.*, the penalty was reduced to one half the original amount.

One more, and the last under this head to which I consider it necessary to allude, No. 72 in the list, was of a most distressing character, and happened at the High Bridge colliery. This melancholy event resulted in the death of Mr. W. Hipkins, part owner, and one of his workmen.

It appeared that, several days previous to the accident, an air-tight scaffold had been constructed in one of the shafts, for the purpose of extinguishing an underground fire, and Mr. Hipkins, believing that sufficient time had elapsed to accomplish this, requested one of his workmen named "Briscoe" to go and remove a portion of the scaffold, which he partially succeeded in doing, but the state of the ascending air was so foul that he was compelled to leave the work, and hasten to the surface. After several unsuccessful attempts to open the scaffold, a quantity of air-cloth trows was lowered to ventilate the shaft. Briscoe again descended, and on reaching the scaffold immediately gave the signal to be drawn up the shaft, and when he was within 11 or 12 yards of the top, he, owing to the presence of carbonic acid gas, became insensible, relaxed his hold, and fell out of the horse down the shaft. The owner, Mr. Hipkins, at once descended, and reached Briscoe, but he unfortunately fell from the effects of the deadly atmosphere, and died side by side with his servant, whilst in the performance of an heroic act to effect his rescue.

Strange to relate, however, neither of the victims took a light of any kind with them. Had they done so, the dangerous condition of the shaft would have been apparent, and their lives spared, or if they had been tied in the horse, and quickly raised (as the men who afterwards recovered their bodies were), they might possibly have escaped a death so terrible and unexpected.

Penalty imposed.

Defective colliery management and loss of life through a careless deputy manager.

Penalty imposed.

The folly of persons rushing either ignorantly or thoughtlessly into an atmosphere the deadly character of which is, or certainly ought to be, well known among miners, is, I venture to think, in this case clear enough, and really needs no comment from me.

Miscellaneous Accidents.

These underground casualties have during the past year undergone decline. Of the six cases recorded in the list, I consider it necessary to refer to four, Nos. 26, 57, 60, and 62, three of which, if not the fourth, were due to the sad effects of carbonic acid gas. The one, however, on which there exists some doubt, No 26 in the list, has reference to the memorable accident which took place by an irruption of water at the Nine Locks pit of the Wallows colliery, belonging to Lord Dudley on Wednesday the 17th March last. This accident threatened at one time to be one of the most serious mining catastrophes that has happened in this district for many years. Happily, however, one life only was lost. On the evening of the day before the accident, 13 men and boys were sent to work in two different sections of the Nine Locks pit, and some time during the night several of these men perceived a great change in the ventilation of the mine, and on going down the "break" inclines to ascertain the cause, were met by an overwhelming flood, which had cut off every approach to both pit shafts, and all means of escape. Nothing was known of the state of the pit till one of the charter-masters descended the next morning, when, to his very great surprise, instead of finding, as usual, a dry pit bottom, he was suddenly lowered into three or four fathoms of water, causing a great splash, which the banksman fortunately heard, and instantly gave the engineer the signal to raise the cage, and thus saved the man's life. This discovery caused of course the greatest consternation, not only amongst the managers and work-people, but the public in the immediate neighbourhood, especially when it became known that 13 human beings were shut up in the mine, without the least possible chance of effecting, for some considerable time, either their rescue or any communication with them. However, on the Sunday following, six of the men were found alive, and got safely out. Early on the Monday morning the dead body of one of the men, named Ashman, was found, and five more of those living; and about noon of the same day the last survivor was also brought out; all of whom, with one or two exceptions, were much exhausted, but under the skilful treatment of Dr. Walker very soon recovered their wonted health and vigour.

With respect to the death of "Ashman," it appeared, from the statement of the other men, that he threw off nearly all his clothing, wandered about the pit, and seeing no chance of escape, probably died in despair, rather than from the effects of carbonic acid gas, as was at first believed.

I arrived at the colliery about noon of the day in question, and found the pits flooded, and all approach to the entombed men cut off. After making myself acquainted with the facts of the case, headways were, at my request, commenced from two different points, with a view, in case the pumping machinery had failed, of reaching the respective sections of the mine in which the men and boys were expected to be found. Fortunately, however, these communications were not, after all, required, as all the means employed in lifting the water out of the mine went on in a most successful and satisfactory manner.

When the state of the mine admitted of my examination, the cause of the sudden irruption of water was evident, as, I found a breach four feet wide and two feet deep in the foundation of a dam which had been constructed in one of the main water levels, through which the water rushed, and rose to a maximum height of 43 feet above the main pipe in the dam, which, however, was fortunately kept from flowing far into the interior of the mine, owing to the high rate of inclination of the coal seam from the bottom of the pit shaft, and to which the safety of the entombed men was solely due. Had, the coal seam been level, or nearly so, the water would have no doubt prevailed throughout these workings to a depth of about six or seven feet, and every living thing must have inevitably perished.

Evidence was given at the inquest held on the body of "Ashman" to the effect that the dam in question had been constructed for the purpose of keeping water back in the "trough pits" of this colliery, to extinguish an underground fire, and that the water which had previously accumulated had been gradually drawn off through the "tap" in the dam. However, whether this was so or not, an overwhelming flood of water did evidently accumulate somewhere behind the dam, which at length rushed into the pit in question, and for several days, as already described, placed the life of every person therein in the most imminent peril. Evidence was also given that the

dam was a proper thing to put in this water-level. Opinions were also offered that the cause of its failure under pressure was due to the friable character of the foundation, and that it was also rendered less secure by blasting ; in which opinions I fully concur. But, as to the dam itself, I may say that in the whole course of 35 years experience in mining, and in some collieries where there has been more than three times the quantity of water to contend with, I never knew a dam of any importance constructed in a main water-level ; for it may in truth be stated, that what the arteries are to the human body, so are the water-levels and air-courses to a healthy and properly conducted colliery.

The construction of a permanent dam in a water-level is, at any time, and was especially in this instance, considering the circumstances and relative positions of the respective pit shafts and workings at and in connexion with the Nine Locks pit, an unwise step.

Moreover, accumulations of water have, in several instances, brought about in certain parts of the country accidents of the most distressing and destructive character. Therefore to create or allow such an accumulation, especially in the crop of a mine, whilst it is still being worked in the dip, and where the only means of ingress and egress are also in the dip thereof, is, whilst the men are in the mine, in my opinion, most improper and too dangerous to be thought of.

Accident 57 occurred at the Hatherton colliery. On the night of the accident, two men were at work in one of the pits of this colliery, and when they commenced the workings were found in a proper condition. However, some time during the night part of the workings became foul, owing to the presence of carbonic acid gas, which drove the men out to the bottom of the shaft, where they were both found next morning in an unconscious state. One, the charter-master's son, only survived the deadly effects of the gas a few hours. The other happily recovered.

If the charter-master had, as required by the special rules, left a competent person in charge of the pit, the life of his son might have been spared, and the surviving man much suffering.

With your permission, proceedings were instituted against the charter-master for infringing the said rules, the hearing of which took place at the Walsall Borough Sessions on the 21st October last, when he was convicted, and fined 1*l.* and costs.

60. Whilst a man and a boy were at work in one of the old thick coal rib and pillar pits of the Buffery colliery, the man sent the boy to the bottom of the shaft for something, who, either in going or returning, missed his way, and unfortunately went into an unventilated and unfenced headway, and was suffocated. This violation of the law was subsequently brought under your notice, and on receipt of your instructions to proceed for the penalties, the agent of the colliery was summoned before the Stourbridge bench on the 15th October last, when he was convicted, and fined 10*l.* and costs.

62. This happened to a workman at White's Farm colliery, who, on the morning of the fatal occurrence, and after being duly cautioned not to go into the workings, left his place of work in a gate road, and not only wandered away, but positively climbed into a small headway about seven feet above the floor of the mine, where he was afterwards found, suffocated by carbonic acid gas. To enable me to examine the headway in question, a ladder was procured, without which, or assistance of some kind, I should certainly have failed to accomplish. Nobody in the pit could in anyway account for this unfortunate man's conduct. He not only disobeyed a recent and positive order, but brought about his own destruction by a most unusual and extraordinary proceeding.

The last of the miscellaneous cases to which I will allude, No. 9 in the list, was caused by the explosion of a boiler at the Whitehall colliery, killing the stoker, R. Ingram, on the spot. An examination of the boiler by myself and Mr. E. B. Martin, C.E., of Stourbridge, a few days after the accident, clearly showed that the cause of the explosion was that the boiler was so old, overworn, repaired, and patched that it was unable to bear the usual working pressure. The continual repairing and patching of steam boilers, however skilfully done, greatly weakens them, as the new metal is often found of a different texture to the old plate surrounding it, and expands and contracts in a different degree, causing strain upon the old work, and thereby generally reducing the whole strength of the boiler.

Therefore in all such cases it is always better to replace them by new ones.

Ironstone Mines.

The fatal accidents in these mines during the year have been as follows ; namely, six by falls, two in shafts, and six miscellaneous, making a total of 14 lives, some of

Loss of life
owing to
charter
master's
neglect.

Penalty
imposed.

Loss of life
through a
careless
agent.

Penalty
imposed.

which, however, are not, in all probability, comprised within the meaning of the Mines Inspection Act, nevertheless I have included all in the return.

None of these fatalities require any special remark, for the causes which brought about these accidents are analogous to those of the coal mines, and the observations in this report with respect to them apply generally to the ironstone mines; there is therefore no need whatever to give any description of them, other than appears in the list itself.

During the year several persons have lost their lives in the collieries of this district, but as they were not employed there they are not comprised within the meaning of the statute, and of course they are not included in the record appended hereto.

Education.

With regard to the education of the miners and their children, I regret to have to state, that so far as my constant inquiries enable me to judge, I do not find any appreciable improvement among them, and I have long ago come to the conclusion that, unless some compulsory measure be enacted applying to every kind of industry, the day is very remote when, if ever, the colliers, as a class, will be found able either to read or write; a state of things which every body conversant with the subject cannot fail to deplore.

To the Right Honorable
Henry Austin Bruce, D.C.L. M.P.,
Secretary of State, Home Department,
London.

I have, &c.,
JAMES P. BAKER,
Inspector of Mines.

REPORTS OF INSPECTORS OF MINES.

List of the FATAL COLLIERY ACCIDENTS, and Loss of Life arising therefrom, in the SOUTH STAFFORDSHIRE AND WORCESTERSHIRE DISTRICT, during the Year ending
31st December 1869.

Date.	No. of Accidents.	Name of Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	Number of Lives lost.			
									Explosions.	Falls of Coal and Roof.	In Sheds.	Misellaneous.
1869.												
Jan. 2	1	White's Farm -	West Bromwich	John Spittle	-	-	T. Thornes	-	Bondman -	26	About twenty-eight pounds weight of the "slips" in thick coal fell upon deceased in gate-road, and killed him on the spot.	- 1 - - - 1
" 4	2	Park Lane -	Tipton -	Colbourn and Sons	-	-	J. Holt	-	Pikeman -	35	Fall of coal in thick coal rib and pillar pit, which deceased was in the act of breaking down.	- 1 - - - 1
" 7	3	Tipton Moat -	Ditto	Tipton Moat Colliery Company.	-	-	H. Gordon	-	Horse driver	16	Crushed between timber setting and a skip, owing to the "skip rails" being laid too near side of gate road.	- - 1 - - 1
" 13	4	Blackheath -	Rowley Regis -	W. H. Dawes	-	-	S. Mason	-	Bondman -	40	Fall of coal in thick coal pit -	- - 1 - - 1
" 15	5	Birchill's New - Walsall -	G. Williams	-	-	-	P. Sculley	-	Bondman -	21	Whilst in the act of improperly getting into skip, he slipped into the "sump."	- - 1 - - 1
" 16	6	Tansey Green -	Dudley -	Woodall and Co. -	-	-	J. Griffiths	-	Ditto -	30	Killed by fall of coal, which deceased was at the time trying to get down; "thick coal."	- - 1 - - 1
" 19	7	Park Head -	Ditto	Evers and Martin -	-	-	T. Hickman	-	Ditto -	35	Fall of coal in thick coal pit, brought about by his own disobedience.	- - 1 - - 1
" 22	8	Tibbington -	J. Howl -	Thos. Cooper	-	-	R. Ingram -	-	Pikeman -	21	Explosion of fire-damp -	- - 1 - - 1
" 26	9	Whitehall -	J. Kendrick -	J. Humphries	-	-	J. Howl -	-	Stoker -	—	Explosion of winding engine boiler -	- - 1 - - 1
" 28	—	Tibbington -	J. Howl -	-	-	-	-	Pikeman -	34	Injured by accident No. 8, died this day.	- - 1 - - 1	
Feb. 8	10	Old Park -	Earl of Dudley	-	-	-	W. Barnbrook	-	Ditto -	18	Injured by fall of coal on the 5th; died this day. Thick coal pit.	- 1 - - - 1
" 10	11	Ettingshall -	B. Chavasse	-	-	-	W. Harper -	-	Sinker -	42	Slipped into pit shaft whilst adjusting "band chain."	- - 1 - - 1
												Carried forward -
												2 6 1 2 1 12

List of Fatal Colliery Accidents—*continued.*

Date.	No. of Accidents.	Name of Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	Number of Lives lost.						
									Explosions.	In Shafes.	Miscellaneous.	Above Ground.	Total.		
1869.	12	Brownhills	Brownhills	W. Harrison	-	Pikeman	40	Brought forward	-	2	6	1	2	12	
—	13	Tipton Green	Tipton	J. Whale	-	Hooker-on-	14	Full of clod in thin mine	-	-	1	-	1	1	
Feb. 11	13	Crescent	Willenhall	Messrs. Bagnall	-	Collier	-	Crushed by descending cage whilst improperly standing in pit shaft.	-	-	1	-	-	1	
," 13	14				-			Fall of new mine coal from a " slip."	-	-	1	-	-	1	
								The coal was clogged and spraged. Deceased had only one arm; such persons are quite unfit for under- ground employment.	-	-	1	-	-	1	
," 18	15	Netherton	Dudley	Messrs. Grazebrook	-	J. Bradley	-	Fall of coal in thick coal pit whilst undercutting a " nob" or small pillar, the result of a " bump." Accidentally fell into sump which he was engaged covering with plants at the time.	-	-	1	-	-	1	
," 22	16	Tibbington	Tipton	J. Howl	-	J. Somberland	-	Accidentally fell into sump which he was engaged covering with plants at the time.	-	-	1	-	-	1	
," 26	17	Salt Well	Netherton	Earl of Dudley	-	J. Hipkiss	-	Fall of coal from a " slip" in the " rib" of a thick coal pit.	-	-	1	-	-	1	
," 27	18	Piercy	West Bromwich	T. Cox and Co.	-	T. Golding	-	Knocked a tree out, contrary to orders, and thereby caused his own destruction in a thick coal pit.	-	-	1	-	-	1	
Mar. 1	19	Old Park	Kingswinford	Earl of Dudley	-	E. Whittaker	-	Injured on the 24th ultimo, whilst cutting " Brazils" in thick coal caused by a " bump;" died this day.	-	-	1	-	-	1	
," 20		Fishley	Bloxwich	The Fishley Colliery Co.	-	J. Mellor	-	Injured by a fall of roof in a thin mine on the 27th ultimo; died this day.	-	-	1	-	-	1	
," 21	21	Bradley	Bilston	G. B. Thorneycroft and Co.	-	W. Mason	-	Fell out of skip whilst ascending, caused by a jerk of the rope.	-	-	1	-	-	1	
								Carried forward	-	2	13	4	2	1	22

REPORTS OF INSPECTORS OF MINES.

List of Fatal Colliery Accidents—continued.

Date.	No. of Accidents.	Name of Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	Number of Lives lost.				
									Explosions.	Falls of Coal and Roof.	In Shafes.	Miscellaneous.	
1869. Mar. 8	22	Old Hill	-	Bowley Regis	-	J. Hickman	-	Pikeeman	-	2	13	4	2
" 18	23	Wallows	-	Brierley Hill	-	O. Skidmore	-	Pulling a rate of coal on side of gate road in thick coal pit, which unexpectedly and suddenly fell, killing him on the spot.	-	1	-	-	1
" 17	24	Shut End	-	J. Bradley and Co.	-	T. Bennett	-	Collier	-	1	-	-	1
" 18	25	Ditto	-	Earl of Dudley	-	J. Powell	-	Ditto	-	1	-	-	1
" 20	26	Wallows	-	Brierley Hill	-	W. Ashman	-	Ditto	-	-	1	-	1
" 31	27	Reddal Hill	-	Messrs. Hingley	-	H. Careless	-	Supposed to have been suffocated by carbonic acid gas.	-	-	-	-	1
April 7	28	Princes End	-	Barbors Field Co.	-	J. Elwell	-	Over winding.	-	-	-	-	1
" 10	29	Tipton Moat	-	Tipton Moat Colliery Co.	-	J. Thomas	-	Fall of coal in thick coal pit from a "slip" in one of the pillars.	-	-	1	-	1
" 16	30	Foxwards	-	Earl of Dudley	-	G. Briscoe	-	Explosion of fire-damp.	-	-	1	-	1
" 17	31	Corbys Hall	-	J. Timmins and Co.	-	J. Granger	-	Walked into pit shaft.	-	-	1	-	1
" 22	32	Easington Wood	-	Essington	-	R. Whitehouse	-	Whilst hoisting in broach coal a portion fell, which knocked the sprags out, and brought about a fall of roof.	-	-	1	-	1
" 23	33	Salt Well	-	Earl of Dudley	-	T. Fulford	-	Fall of coal in thin mine in a waste. Deceased was cutting the coal, which fell, and proved so fatal to him.	-	1	-	-	1
" 28	34	Stourbridge	-	F. T. Rufford	-	J. Brooks	-	Walked into pit shaft.	-	-	1	-	1
" 29	35	Black Heath	-	Rowley Regis	-	W. H. Dawes	-	{ S. Weaver and G. Green	-	2	-	-	2
										Carried forward	-	3	22
											3	22	8
											1	3	37

List of Fatal Colliery Accidents—continued.

Date.	No. of Accidents.	Name of Colliery.	Where situated.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	Number of Lives lost.					
									Explosions.	Falls of Coal and Roof.	Miscellaneous.	Above ground.	Total.	
1869.									3	22	8	3	1	37
May 7	36	Victoria	-	Darlaston	-	J. Dutson	-	G. Cooke	-	Bankman	-	-	-	1
," 8	37	Wallow	-	Brierley Hill	-	Earl of Dudley	-	G. Askins	-	Pikeman	20	Pushed skip into pit shaft, and followed it. Had neglected to adjust the iron rod fencing on pit wagon, and thereby lost his life.	-	1
," 8	38	Old Park	-	Kingswinford	-	Ditto	-	W. Heathcock	-	Ditto	41	Accidentally buried by a fall of " roof and shut," in thick coal pit, whilst knocking some timber out. Whilst driving a wedge in the benches of a thick coal pit, a piece of the slipper coal fell from a " slip," which broke over the sprags. Injured on the 7th instant, died this day.	-	1
," 22	39	Salt Well	-	Netherton	-	Ditto	-	S. Baugh	-	Ditto	30	Injured by a fall of fine coal, 25 lbs. weight, in thick coal pit. He died the same day, soon after he reached his home.	-	1
," 40		Himley	-	Kingswinford	-	Ditto	-	W. Hickman	-	Ditto	-	Injured by a fall of coal, 16th February; died this day. Thick coal pit.	-	1
," 26	41	White's Farm	-	West Bromwich	-	J. Spittle	-	J. Lowe	-	Bondsman	-	Fall of coal in thick coal pit	-	1
," 29	42	Rounds Hill	-	Tipton	-	Earl of Dudley	-	T. Turner	-	Pikeman	-	Fall of coal in thick coal pit	-	1
," 43		Baptist End	-	Netherton	-	Messrs. Dunn	-	J. Bird	-	Deputy	-	Fall of coal in thick coal pit	-	1
June 3	44	Neathells	-	Willenhall	-	S. Groucott and Sons	-	E. Law	-	Hooker-on-Horse-driver	20	Crushed by descending cage	-	1
," 4	45	Pelsall	-	Pelsall	-	B. Bloomer	-	A. Newman	-	Horse-driver	15	A piece of coal fell off the " face," and crushed him against a skip.	-	1
," 8	46	Princes End	-	Tipton	-	Barbors Field Company	-	J. Birk and others.	-	Bondsmen	30	Fall of coal in thick coal pit, which fell out from between two " slips."	-	3
										Carried forward	-	3	33	9
												4	1	50

List of Fatal Colliery Accidents—continued.

Date.	No. of Accidents.	Name of Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	Number of Lives lost.			
									Explosions.	In Shp. &c.	Miscellaneous.	Above Ground.
1869.	June 10	47	Salt Well	-	Netherton	-	Earl of Dudley	-	W. Hill	-	Bondsman	20
"	"	48	Wyrley	-	Wyrley	-	T. Bantock	-	{ W. Perks - S. Smith - D. Groucutt -	Collier	-	-
"	"	49	Paddock	-	Coseley	-	H. B. Whitehouse	-	{ S. Smith - J. Mason - C. Baker -	Engineer	-	2
"	"	50	Round's Hill	-	Tipton	-	Earl of Dudley	-	{ D. Groucutt - J. Mason - C. Baker -	Pikeman	-	-
"	"	51	Lane Head	-	Willenhall	-	J. Hawkins	-	{ J. Bowater - T. Morgan -	Bondsman	17	-
"	"	52	White Heath	-	Rowley Regis	-	T. Price	-	{ S. Rudge - J. Bowater - T. Morgan -	Ditto	40	1
"	"	53	Rocket	-	Bilston	-	Earl of Dudley	-	{ T. Price - Earl of Dudley -	Ditto	45	1
July 7	54	Bromford	-	West Bromwich	-	W. H. Dawes	-	G. Middleton	-	Pikeman	32	1
"	8	55	Cannock and Rugeley	-	Rugeley	-	Cannock and Rugeley Colliery Company.	-	J. B. Bailey	Horse-driver	-	1
"	10	56	Piercey	-	West Bromwich	-	T. Cox and Co.	-	T. Mason -	Pikeman	27	1
"	"	57	Hatherston	-	Bloxwich	-	G. and R. Thomas	-	W. Athersmith	Ditto	27	1
"	"	58	Tibbington	-	Tipton	-	J. Howl	-	S. Groucutt	Bondsman	—	1
"	"	59	Gospel Oak	-	Ditto	-	Grazebrooks and Aston	-	S. Edwards	Pikeman	—	1
Aug. 3	60	Buffy	-	Dudley	-	T. Crewe	-	S. Crewe -	Collier boy	-	1	1
"	61	Deepfield	-	Bilston	-	Earl of Dndley	-	T. Potts -	Bondsman	37	1	1
"	62	White's Farm	-	West Bromwich	-	J. Spittle	-	F. Brooks	Ditto	—	1	1
										Carried forward	3	45
											10	9
											1	68

List of Fatal Colliery Accidents—continued.

Date.	No. of Accidents.	Name of Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	Number of Lives lost.				
									Explosions.	Falls of Coal and Roof.	In Shaft.	Miscellaneous.	
1869. Aug. 21	63	Wyrley Cannock	Cheslyn Hay	Wyrley Cannock Colliery Company.	C. Brindley	Pikeman	- 24	Injured by fall of coal whilst holing in thin mine on the 17th instant; died this day; the result of inadequate timbering.	- 3	45	10	9 1	68 1
" 25	64	Ebenezer	Wednesbury	B. Whitehouse	J. Dawes	Bondsman	- 20	Struck by some bricks which fell out of the shaft whilst ascending.	-	1	-	1	1
" 26	65	Pool Hayes	Willenhall	Messrs. Fenn	S. Hartshorn	Collier	-	Fall of coal in thin mine (accidental).	- 1	-	-	1	1
" 26	66	Spring Vale	Bilston	T. Bontock and Co.	T. Satchwell	Bondsman	- 25	Whilst preparing to stand a prop, the coal over his head suddenly fell, killing him on the spot.	- 1	-	-	1	1
" 27	67	Highfields	Ditto	H. B. Whitehouse	G. Carter	Pikeman	- 38	Fall of coal in thick coal pit, which he was at the time endeavouring to break down.	- 1	-	-	1	1
Sept. 2	68	Birchill's Hall	Walsall	Maiden and Parkes	J. Hewitt	Bondsman	-	Fall of roof whilst examining one of the old stalls of a thin coal pit.	- 1	-	-	1	1
" 4	69	Wednesfield Heath.	Wolverhampton	J. Round and Co.	W. Round	Sinker	- 33	Deceased was the owner's son, and was engaged cleaning the sump, when a piece of coal fell out of the side of the shaft, and killed him on the spot. His father had examined the shaft himself within a few minutes of the accident.	-	-	-	1	1
" 9	70	Roughwood	Bloxwich	Roughwood Colliery Co.	J. Steele	Bondsman	-	Fell off cage whilst ascending.	-	1	-	1	1
" 25	71	Wallow's	Brierley Hill	Earl of Dudley	J. Raybould	Labourer	- 50	Crushed between railway truck and the wall of the siding.	-	-	-	2	2
" "	72	Hall Bridge	Tividale	W. Hipkins and Co.	{ The Owner J. Briscoe W. Smart	Owner	- 25	{ Suffocated by carbonic acid in pit shaft.	-	-	-	1	1
" "	73	Granville	Rowley Regis	Swindell and Collis		Collier	- 21	Deceased was pulling some overhanging coal in upper thick coal workings, a piece of which fell upon and killed him instantly.	-	1	-	-	1
						Under	- 55	Deputy.					
								Carried forward -	3	51	11	13	2 80

List of Fatal Colliery Accidents—continued.

Date.	Name of Colliery, No. of Accidents.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	Number of Lives lost.						
								Explosions.	Falls of Coal and Roof.	In Shuts.	Miscellaneous.	Above ground.		
1869. Sept. 28	74 Barn Farm	Darlaston	S. Speake	Thos. Clarke	Bondeman	52	Brought forward	-	3	51	11	13	2	80
," 29	75 Baptist End	Netherton	Messrs. Dunn	E. Warton	Ditto	40	Fall of coal in new mine, whilst in the act of taking the spurs out. Accidental fall of roof and timber, the latter of which only struck deceased. Thick coal pit.	-	1	-	-	-	-	1
Oct. 2	76 Station	Bloxwich	Station Colliery Co.	W. Williams	Colliery boy	14	Fall of roof in gate road. Thin mine.	-	1	-	-	-	-	1
," 5	77 Green Lane	Walsall	J. Baker	J. Vincent	Pikeman	54	Injured on the 2nd instant by fall of coal and bat, whilst cutting the spurs out in thin mine; died this day.	-	1	-	-	-	-	1
," 78	79 Moxley Rounds Hill	Bilston	S. Groucott and Sons Earl of Dudley	S. Boden	Ditto	-	Fall of coal in thin mine	-	1	-	-	-	-	1
," 14	79	Tipton	B. Jenks	Ditto	Ditto	28	Had neglected to sufficiently spurn the coal whilst cutting in thin coal pit.	-	1	-	-	-	-	1
," 19	80 Roughwood	Bloxwich	Roughwood Colliery Co.	W. Muller	Ditto	27	Injured by fall of coal on the 12th instant; died this day. Had neglected to sprag.	-	1	-	-	-	-	1
," 21	81 Ebenezer	Wednesday	B. Whitehouse	S. Davies	Ditto	21	Injured by explosion of firedamp on the 16th instant; died this day.	-	1	-	-	-	-	1
," 23	82 Copp Hall	West Bromwich	J. Bagnall and Co.	{ J. Bebb P. Key	Deputy Pikeman	46 40	{ Fall of about 5 or 6 tons of "brassils" and tow coal from a "skip" in thick coal pit.	-	2	-	-	-	-	2
," 26	83 Deepfield	Bilston	P. Williams and Co.	J. Parkes	Bondeman	50	Whilst removing a prop to take a bar out, the setting gave way, which let down some slack, and smothered him.	-	1	-	-	-	-	1
," 28	84 Ebenezer	Wednesday	B. Whitehouse	R. Lunn	Night Deputy.	27	Injured by explosion of fire-damp on the 17th instant; died this day.	1	-	-	-	-	-	1
							Carried forward	-	5	61	11	13	2	92

List of Fatal Colliery Accidents—continued.

Date.	Name of the Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	Number of Lives lost in Coal Mines.											
								Explosions.	Blows of Coal and Roof.	In Sheds.	Misfortune.	Above ground.	Total						
1869.																			
Nov. 14	85	Tipton Moat	Tipton		Tipton Moat Colliery Co.	J. Purchase	-	Pikeman	-	5	61	11	13	2	92				
" 19	86	Haden Hill	Rowley Regis	-	W. Bassand and Co.	D. Cartwright	-	Bondman	-	-	1	-	-	-	1				
" 22	87	Old Park	Wednesday	-	Patent Shaft Company	T. Waron	-	Deputy	-	-	1	-	-	-	1				
" 25	88	Rough Wood	Bloxwich	-	Rough Wood Colliery Co.	J. Crutchley	-	Pikeman	-	-	1	-	-	-	1				
" 30	89	Green Lane	Walsall	-	J. Baker	-	-	W. Jackson	-	42	Walked or slipped into pit shaft	-	-	-	-				
Dec. 2	90	Colterill's Farm	Tipton	-	Darlaston Iron Co.	R. Williams	-	Hooker-on	-	24	Fall of roof in thin mine. Accidental.	-	-	-	-				
" 17	91	Neachells	Willeshall	-	S. Groucott and Sons	A. Smallman	-	Collier boy	-	63	Brick fell out of a shaft which the deceased assisted to repair the day previously.	-	-	-	-				
" 18	92	Monway	Wednesday	-	Patent Shaft Company	F. Bowen	-	Bondman	-	13	Injured by fall of rock from a slip on side of a gate road on the 10th ultimo ; died this day.	-	-	-	-				
" 22	93	Tipton	Rowley Regis	-	Colbourn and Co.	J. Davenport	-	Collier boy	-	30	Injured by fall of coal on the 7th instant ; died this day. Deceased was removing the spraggs, when the coal fell upon him.	-	-	-	-				
" 20	94	Blackheath	Wednesday	-	W. H. Dawes	J. Southall	-	Horse-driver	-	48	Injured by the coal he was cutting in a new mine coal pit, which injury terminated fatally four hours after the occurrence.	-	-	-	-				
" 27	95	Old Park		-	Patent Shaft Company	S. Westwood	-	Hooker-on	-	18	Kicked by the pit horse	-	-	-	-				
" "	96	Spring Vale	Bilston	-	T. Bantock and Co.	S. Wynn	-	Pikeman	-	18	Fell into sump from an upper inset whilst holding on the 22nd October ; died this day. Deceased had neglected to sprag.	-	-	-	-				
								Deputy	-	42	Explosion of firedamp on the 23rd instant ; died this day.	1	-	-	-	1			
											Total	-	-	6	68	14	14	2	104

REPORTS OF INSPECTORS OF MINES.

List of the FATAL ACCIDENTS and LOSS OF LIFE in IRONSTONE MINES in the SOUTH STAFFORDSHIRE and WORCESTERSHIRE DISTRICT, during the Year ending
31st December 1869.

Date.	No. of Accident.	Name of the Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	Number of Lives lost in Coal Mines.				
									Explosions.	In Shafts.	In Mines and Roads.	Total.	
1869.	Feb. 16	1 Deep Moor	- Walsall	- J. Bagnull and Sons	- P. Griffin	-	Bondman	33	Fall of roof in Blue-flatt pit. Injured on the 10th instant; died this day.	-	1	-	
Mar. 8	2 Old Park	- Wednesbury	-	Patent Shaft Company	- T. Lloyd	-	Ditto	36	Injured by fall of ironstone measures on the 2nd instant; died this day.	-	1	-	
Apr. 13	3 Willenhall New Ashfield	- Willenhall New Bloxwich	-	Fletcher, Solly, and Co. B. Bloomer and Son	- T. Towers J. Cartwright	-	Pikeman	39	Fall of ironstone measures - Crushed by tub in gate road whilst improperly riding thereon.	-	1	-	
" 21	4 Saltwell	- Netherton	- Earl of Dudley	-	- J. Baker	-	Pikeman	15	Fall of ironstone measures whilst holing.	-	1	-	
May 15	5 Saltwell	- White Heath	- Rowley Regis	- W. Price	-	J. Cadman	-	Ditto	-	Injured by a timber prop on the 28th ultimo; died this day.	-	1	-
June 5	7 Friar Park	- Wednesbury	-	W. H. Dawes	-	J. Pugh	-	Miner	17	Skip knocked a tree out, and caused a fall of roof.	-	1	-
" 16	8 Old Park	- Kingswinford	- Earl of Dudley	-	J. Beardmore	-	Bondman	17	Injured his hand carrying an iron rail on the 25th ultimo; died this day.	-	1	-	
July 30	9 Wall End	Bloxwich	-	Messrs. Thomas W. Ward and Sons	-	W. Groveror W. Cadman	-	Ditto	-	Injured on the 15th; died this day.	-	1	-
" 10	10 New Priestfield	Willenhall	-	-	-	-	Hooker-on	15	Brick fell off a skip at pit top, and struck deceased at the bottom of the shaft.	-	1	-	
Sept. 17	11 Bentley	- Walsall	-	Messrs. Barker T. Bantock and Co.	-	W. Taylor E. Hyde	-	Pikeman	-	Found dead at bottom of a pit shaft	-	1	-
" 28	12 Dock Meadow	Bilston	-	S. Groucott and Sons	-	T. Jobourne	-	Brusher	29	Fall of ciod	-	1	-
Oct. 21	13 West Bromwich Hall.	West Bromwich	-	Messrs. Addenbrooke	-	F. Aberley	-	Miner	18	Crushed by trolley wagon	-	1	-
" "	14 Rough Hay	Darlaston	-	-	-	-	Banksman	35	Walked in to pit shaft	-	1	-	
										Total	-	6	2
												14	

Mr. Wales' Report.

Report on the WORKING of the MINES INSPECTION ACT (23 & 24 Vict. c. 151.) for the SOUTH WALES DISTRICT for the Year ended 31st December 1869.—
By THOMAS E. WALES, Esq.

SIR,

Swansea, 28th February 1870.

As Inspector of Mines for the South Wales District, I have the honour to report as follows for the year ending 31st December 1869:

The number of fatal accidents and loss of lives arising therefrom are, I regret to state, considerably larger than the previous year, as the following figures show:—

Total lives lost in 1868	-	-	104
Ditto 1869	-	-	181
Increase in 1869	-	-	77

And the following monthly statement will show how and when these accidents occurred:—

MONTHLY STATEMENT of DEATHS caused by ACCIDENTS in the COAL MINES of the SOUTH WALES DISTRICT in the year 1869.

	Number of Fatal Accidents.	Explosions of Gas.	Suffocation.	Falls of Coal.	Falls of Stone.	In Shafts.	Miscellaneous.	On Surface.			TOTAL DEATHS.
								Machinery.	Miscellaneous.	Boiler Explosions.	
January	10	1	—	1	5	2	1	—	—	1	10
February	14	3	—	2	7	2	2	—	—	—	16
March	8	3	—	—	6	1	—	—	—	—	10
April	8	—	—	—	6	—	1	—	1	—	8
May	10	—	—	2	3	2	1	—	2	4	14
June	10	53	—	—	5	2	2	—	—	—	62
July	5	1	—	2	1	1	—	—	—	—	5
August	5	1	—	1	1	—	1	—	1	—	5
September	14	—	—	1	7	—	5	—	—	1	14
October	8	1	—	—	4	—	8	—	—	—	8
November	11	6	—	2	4	1	3	—	—	—	16
December	12	1	—	—	3	4	2	—	3	—	13
Total	115	70	—	11	52	15	21	—	7	5	181

And the annexed tabular form will show the per-cent-age of fatal accidents and persons killed, the quantity of coal raised per fatal accident, and quantity of coal raised per life lost:—

	1869.	1868.
Computed number of persons employed	29,000	29,000
Quantity of coal raised in tons	9,180,000	9,000,000
Number of fatal accidents	115	100
Number of lives lost by ditto	181	104
Number of persons employed per fatal accident	252	293
Number of persons employed per life lost	160	281
Number of tons of coal raised per fatal accident	79,826	90,000
Number of tons of coal per life lost	50,718	86,538

Explosions of Gas.

Eight explosions have occurred during the year, resulting in the loss of 70 lives

The first took place in the Aberdare Merthyr Colliery on the 10th of January, resulting in the death of one person, and was caused by the deceased passing the danger signal with a naked light, and exploding a small quantity of gas.

The second occurred in the Forchaman Colliery, belonging to the Powell Duffryn Steam Coal Company, on the 9th February, resulting in the loss of three lives.

This explosion occurred through a small quantity of gas having lodged in a cavity of the roof caused by a fall, and at the time proper means were being resorted to for its safe dislodgment.

The pit was worked with locked safety lamps; but, unfortunately, one of the deceased, against the rules of the colliery and express orders of the colliery officials, fired a shot, which ignited the gas and caused the explosion. I have never met with a more flagrant breach of the rules than this was.

The third explosion occurred on the 26th of March, in Mynydd Newydd Colliery, belonging to Messrs. Vivian and Sons, resulting in the loss of three lives.

This colliery is by no means a fiery one, and is worked with candles or naked lights. A small quantity of gas had accumulated in a certain heading during the day; the men were removed, and a danger signal placed at the entrance; and it was intended to have removed such gas during the evening; but, from the evidence at the inquest, it appeared that one of the deceased men had passed the danger signal with a naked light in search of a shovel, fired the gas, and caused the explosion.

The fourth explosion occurred in the Ferndale Colliery, belonging to Messrs. David Davis and Sons, on the 10th of June, resulting in the loss of 53 lives.

The coroner's inquest in this case was a lengthened one, extending over more than three months.

I was assisted in the investigation as to the cause of this explosion by my colleague Mr. Brough, whose evidence as well as my own, as given at the inquest, I append.

Mr. Lionel Brough said:—I am the Government inspector of the coal and ironstone mines of the South-western division of the kingdom, and I have assisted Mr. T. E. Wales by order of the Right Honourable the Secretary of State for the Home Department. I have been twice in the Ferndale Colliery since the explosion. My first inspection took place on Wednesday, the 16th June, and the second underground visit was on Thursday, the 15th day of July. I have listened to most of the evidence given in this court since it was opened, and that which I did not hear has been supplied to me by my colleague. Ferndale is aired by furnace power, but Mr. Wales' description of it is more complete than mine, inasmuch as he is far more intimately acquainted with the colliery than I can possibly make myself by the mere inspection of a couple of days. Suffice it to say, then, that on the 15th July we made out that the various currents of air amounted to 102,047 cubic feet per minute, but then it must be borne in mind that on that day the water was nearly roofed on the top of the No. 7 dip steading, so that the normal quantity of wind was not then actually passing. Five days after the explosion, Mr. Wales informs me that he found a larger quantity than that which I have just recorded. My own opinion is, that when all was going well the average amount of fresh air passing down the winding pit would not be less than 110,000 cubic feet per minute. I do not see but what that would be sufficient to meet the exigencies of the Act of Parliament as far as "ordinary circumstances" are concerned; but as at times the Ferndale Colliery, and indeed most others, is liable to extraordinary and abnormal conditions, then I would very much like to be more on the side of safety, and for that reason it would be desirous to advocate that the words "under ordinary circumstances" should in any future legislative enactment be struck out of the first general rule. However, it is the existing statute that guides us in the present inquiry, and I must repeat that I am not here to state that 110,000 cubic feet of air was too little for the ventilation of the Ferndale Colliery. Nevertheless, if more wind could have saved all those lives on the 10th of June last, then the value of the expunging of those three words would be made manifest. I am conscientiously of opinion that the rule would have been better, because clearer, if those three words had never been inserted at all, and their expurgation will be the initial step towards the reduction of the number of deaths that take place by explosions of firedamp underground. If the present quantity of air should be found insufficient to keep this colliery safe, then the owners will be bound to supply the required increase, and certainly the application of more power is not difficult, nor will it be found to be very expensive. There is room enough for another furnace, and the

ventilation may be rendered complete by raising a stack on the upcast, but it should be of the full size and shape of the pit.

One advantage, at all events, would arise from this latter improvement—even if it did not increase the volume of air, it would certainly prevent the baffling to which it is liable in consequence of the peculiar configuration of hill and valley in the immediate neighbourhood, and also by reason of the mountain storms that often prevail there. With regard to the cause of the disaster which brings us together this day, I have formed an opinion which I think is reasonably founded, but in order to give the opinion greater weight I must premise that in all the evidence that has been tendered the allegation of accumulation of firedamp in the workings is but faintly supported. Indeed, it becomes questionable whether standing gas was really met with at all for some time previous to the explosion. This I hope to be true, for we cannot hide from ourselves that the deliberately allowing of gas to gather together in working faces and travelling roads, and then letting it remain there, would not only be a violation of the law, but also an outrage to humanity. Blowers are deposed to by various witnesses, and their frequent appearance is beyond all doubt, but that the gas remained for any length of time in the working places is without confirmation. Upon the whole, these sudden eruptions of gas seem to be promptly dealt with, and, so far, accumulations of firedamp were not permitted. On this subject nothing can be more clear than the ruling of the justices of the Court of Queen's Bench in the Tredegar case. The Lord Chief Justice said that the provision of the statute is to the effect that the whole mine must be kept ventilated, so as to prevent the working in places becoming dangerous by reason of gas accumulating in them. You must ventilate so much of it as that it will be safe for the working people. And Mr. Justice Blackburn said he "concurred in that "interpretation of the rule as laid down by my Lord; the meaning is, that you shall "ventilate the mine to such an extent that there will be no danger to the working "places." In all that I have now said and quoted with regard to accumulations of gas and of sudden blowers I refer, of course, to the circumstances in existence previous to the explosion. What happened afterwards has nothing to do with the present inquiry. I have not been able in my own district to do away with the use of gunpowder. In this respect Ferndale is better off than any collieries I habitually inspect, because, through the intervention of Mr. Wales, the owners consented to the total abandonment of shot firing in the coal; but for all this advantage, and notwithstanding such a supply of fresh air as is seldom met with in the principality, the pit has fired a second time. It is true that the Rhondda Vach is a virgin magazine of firedamp which has never been tapped as far as I know anywhere, except at the Ferndale Colliery. This circumstance assists us in some degree in understanding the nature of those heavy falls of roof and frequently recorded occurrence of blowers, and so to a certain extent becomes a clue in seeking for the cause of explosion. I am, then, strongly inclined to believe that the leaving of the upper vein (the two-feet-nine) untouched has much to do with the disturbance of strata that appears so often in the journal or log book. On reference to that record many entries will be found of "blowers and heavy falls to-day," and occasionally will be seen "no blowers or falls to-day," which would almost admit the fact of blowers and falls being really the normal condition of the colliery. The "upper four," being worked on the outstroke, the measures above it get loosened, perhaps even up to the "two-feet-nine" itself, and I entirely believe that the concentrated gas in it and in its concomitant beds acts most energetically on the roof of the larger seams, and expends itself in such force as not only to bring down ponderous falls of top in the working faces and roadways of the "upper four," but also to fill them suddenly with floods of discharged firedamp, and then a bad lamp brings about explosion. That, indeed, may take place with perfect lamps, for the physical action of a heavy fall is displacement of air, which rushes in all directions where space can be found, carrying with it the eliminated hydrocarbon at such speed that it must be a remarkable lamp that will not pass the flame; in other words, the sudden expansion of the compressed gas and the heavy falls are but cause and effect. Do away with the action of the one, and the other will cease to appear. Mr. Wales and myself believe that the cessation of those phenomena, or a great mitigation thereof, will be arrived at by working the "two feet nine" simultaneously with the "upper four" and a little in advance of it, and that this process will greatly modify the difficulty of working and airing the colliery. In all extraction of coal, if it is found that one system is unsuitable, then by all manner of means alter that method of working. If the mode just described will not do, endeavour to arrive at some other. There are many ways of getting coal. Anyhow it will be far better to attempt some improved plan than to undergo another explosion at Ferndale. In my own opinion, in

which I believe I am joined by Mr. Wales, the disaster we are now investigating was entirely brought about by one of those falls of roof. Its site might have been near No. 5, or No. 6, or No. 7, all north headings. In my map I have marked with the letter F a heavy fall in each of those places. The ignition of the gas brought down would be by a lamp, perfect or imperfect, as already described. I cannot take upon myself to say which of those falls caused the explosion, but I am strongly inclined to think it was the one between No. 7 south and No. 5 north, but either of the three would be sufficient to account for the terrible results that followed. Moreover, the direction of the doors and disturbed timbers is consistent with explosion at any one of those three points, unless, indeed, the evidence given by Richard Griffiths shakes that view. I think he said the two doors at No. 7 were blown northwards, but that is extremely doubtful. Such then is my opinion of the cause of the Ferndale fatality, namely, a heavy fall at top. I may add that I did not myself find any gas in my explorations, which to a certain extent is confirmatory of this view. I may here observe, as I did at the inquest of 1867, that as an explosion has followed, by partial vacuum it sometimes happens that timber which withstood the blast may fall in a contrary direction by the "suck of the pit," as it is called; therefore we should not always and invariably rely on the direction in which we may find materials prostrated. On the occasion of my first inspection on the 16th June, I rather inclined to the theory that in some portion of No. 7 dip workings was to be found the source of destruction, but subsequent examination and closer reasoning convince me that the cause of explosion was a great fall somewhere between Nos. 5 and 7 north, as already mentioned. Now where such a colliery as Ferndale is concerned, the strict sense of duty compels me to speak of safety lamps so called. The present requirement, then, is one that will not pass the flame through the gauze under a speed of 30 or 40 feet per second; and that class of lamp I think did not prevail in Ferndale prior to the explosion. Now, this desideratum is said to be found in the invention of Mr. Hann, of Mr. Lindsay Wood, and of Mr. Morrison; also our county member (Mr. Vivian) the other day spoke to me about another lamp at the Morfa, of a very promising kind indeed, but which as yet I have not seen. After ventilation, I need not say, that the next most important consideration is the lighting of coal mines. In experiments lately made by practical men in the north of England it was found that at the speed of eight feet per second, and in some instances even still lower, the gauze actually passed the flame. If this be so, it is incumbent on colliery owners to use only those lamps which are reputed to be the safest. Men's lives must not be endangered for the sake of sixpence or a shilling in the price of a lamp. In coming near the conclusion of this evidence, I may remark that in working the "two-feet-nine," and so preventing any falls, the prevalence of blowers will disappear also to a very considerable extent. But in this way of carrying on the colliery it will be absolutely necessary to find stuff to fill up all the hollows; and, moreover, in the working faces the top must be received on a strong gob. It will be remembered in evidence that Mr. David Rees informed Mr. Bedlington of the necessity of filling up the places. Another witness (R. Griffiths) had also spoken of the danger of leaving places unfilled. I also beg permission to add my testimony to the same effect. Stowing or filling up all hollows will add to the security of the top, and greatly assist in preventing the leakage of air. If there were no stuff in the pit it might be sought for elsewhere, but however, if the "two-feet-nine" and the "upper four" are both worked at the same time, there will then perhaps be plenty of stone and stuff for "gobbing" and filling up. I do not know that it is any part of my duty here to meddle with the alleged difficulty of procuring timber for the construction of cogs, but I must make one remark about the mode of supporting the top in the working places, and it is that nothing in the world can hold it up so well; but with the present mode of working the "upper four" feet vein the roof will come down somewhere. And who knows but that these strong and staunch cogs have something to do with the fall of these tremendously heavy superincumbent masses in the roadways and elsewhere? I grant that a cog will securely support the top in its own immediate neighbourhood, but as the colliery is now carried on, I repeat the vast and thick roof is sure to come down in some part or other of the roads or workings. Another point in the evidence I cannot refrain from remarking on is the strange plan to which workmen are obliged to resort in order to obtain rails and other materials, that is to say, by going into abandoned places to procure that which is essential to the getting of their bread. If the evidence about this extraordinary method of supply is to be relied on, I cannot help expressing a doubt in my own mind to which party it is most disadvantageous, the workmen or the owners. Perhaps the men are the worse off, because to their share falls the element of danger. During my second inspection I found a portion of the return air course, perhaps a couple of hundred yards or so, of magnificent sectional area, but I was told that such improve-

ment had been stopped. This I regret, because if all the returns had been of that size, the very objectionable water gauge of 2·10 inches might have been reduced by at least half an inch. There is no truth-teller underground like the water gauge. Finally, I beg permission to bring under your notice a circumstance connected with this event that had obtained consideration years and years before either Ferndale explosion. I speak of panels in underground workings. The colliery we are now giving and hearing evidence about is so laid out, whether by design or by chance I know not, as in some respects to come under the category of panelling. The explosion of 1867 was unattended with death on the Duffryn side, and now the second explosion of June last, though frightful in fatality in the Duffryn, has not killed a single person in the Rhondda and the Glo-bach. Those two districts remained entirely undisturbed. There are many amongst us who think panelling is of little use; but the two explosions in Ferndale tell altogether a different story; and what is remarkable is, that the separation of one district from the other is but imperfectly arrived at, and yet on the occasion of both explosions that faint and uncertain isolation appears to have been the means of saving life. This is worth remembering by those who in future may have to lay out new collieries in fiery neighbourhoods. The disasters which have occurred this year, both at home and abroad, have been so desolating as to urge us on to neglect no improvement, to overlook no prudential step within our means, to ward off and put a stop to these terrible explosions of firedamp.

Copy of my own Report at the Inquest.

As Inspector of Mines for the South Wales District, it has devolved upon me to inspect the Ferndale Colliery, to ascertain, if possible, the cause of the explosion which occurred there on the morning of Thursday, the 10th of June last.

It will be remembered that it is not yet two years since the previous explosion occurred in this colliery, whereby no less than 178 lives were lost. This fact should stimulate all concerned in this important inquiry to make it one of a most searching nature.

You have already had a very detailed account from the different witnesses as to the mode of working, and I shall not therefore trouble you with a repetition of that, but at once proceed to give a general outline of the colliery.

The Ferndale Colliery is sunk in a district where large tracts of the celebrated Aberdare steam coals abound and are comparatively untouched, so that it is the only outlet for the large quantity of gas liberated, and occasionally under great pressure in working those coals. The coal worked at this colliery is known as the Aberdare upper four feet steam coal. It is a fiery coal, and is therefore worked entirely with locked safety lamps. In accordance with suggestions made by myself for the safer working of this colliery, shot firing is strictly prohibited during working hours. Long wall is for the most part the principle of working, but double stall is to some extent introduced. I believe the quantity of air travelling at the time of the explosion on the 10th of June would probably be about 110,000 feet per minute. After noticing the evidence of the several witnesses who had been called, Mr. Wales went on to give an account of his own examination of the Duffryn district immediately after the explosion. He said: I had business in the Aberdare district on the morning of the explosion, and I was enabled to search the colliery within six or seven hours after the explosion occurred. On reaching the pit I immediately descended and proceeded up the north and west level, where the explorers were engaged in recovering the bodies. I found the air-crossing had been blown away, and been again partially repaired, as well as the different doors. I also found that several falls had occurred, and between No. 6 and No. 7 headings north there was a very large fall. The roof was then in a very unsettled state there. This would go to show that at that point the roof had been subjected to some great disturbing cause, and that of recent origin. I have also from time to time since that been in the colliery, and made very careful examinations into such matters and things as I thought were calculated to enable me to form an opinion as to the cause of the explosion, where it occurred, and the probable condition of the workings immediately before it occurred. On Thursday, the 15th of July, Mr. Brough and myself examined the whole of the Duffryn district, excepting of course the No. 7 dip, which was then filled with water; and although the quantity of air passing was considerably reduced, we failed to find any accumulation of gas, even of the smallest extent. The quantity of air passing into the district at the time of the explosion would probably be about 30,000 feet per minute, so that it would require a discharge of from 2,500 to 3,000 feet of gas per minute to have

rendered such a current explosive, and if such a discharge continued only for five minutes there would be from 120,000 to 150,000 cubic feet of highly explosive gas, quite sufficient in my opinion to have caused the terrible results which we all so much deplore. Experiments made by some of our ablest mining men of the day have proved beyond a doubt that the safety lamps now in general use—I mean the Davy, Stephenson, and Clanny—are unsafe, and will pass the flame when exposed to an explosive current having a velocity of eight or nine feet per second, which is only from five to six miles an hour; and at almost any point on the No. 1 west "intake" level the air would be travelling at a much higher velocity than eight or nine feet per second; so that if that current of air was rendered explosive, it was not necessary that it should come in contact either with a naked light or a defective lamp to have caused the explosion. Since these startling facts were made known much attention has been given to the subject, and several lamps—Messrs. Lindsay Wood's, Hann's, Morrison's and others—have been discovered, which I am told are safe up to a velocity of 30 or 40 feet per second, but it is found that such lamps are easily put out on being moved, which is a great drawback to their general adoption, but I hope this defect may ultimately be overcome. From the absence of evidence to show that there was any accumulation of gas in any part of the district on the morning of the explosion; from the frequent occurrence of blowers; from the large quantity of air, about 30,000 feet per minute, passing into the district, and from my own personal observations made during several careful inspections of the district, one having been made on Saturday last, I am of opinion that the calamity is to be attributed to a large and sudden outburst of gas somewhere on the No. 1 west intake level, which may have come from the two-feet-nine vein, which lies only 10 or 12 yards above the four-feet coal, and that owing to the high velocity at which the air was travelling, it was exploded by one of the lamps; and from the position of the doors, &c., I think the explosion probably began somewhere near the beginning or top of No. 7 dip on the same No. 1 west level. If the two-feet-nine coal was worked in advance of or simultaneously with the four-feet coal, it might to some extent relieve the working of the latter from those sudden outbursts of gas; and I would also suggest that the principle of working by double stall be discontinued, and that the workings of the colliery generally should be more concentrated. The adoption of such would, I think, greatly reduce the distance the air has to travel, as well as the number of doors necessary to direct it through the workings. But in my opinion the great safeguard against these sudden outbursts of gas will have to be found in the discovery of a more perfect safety lamp; one that will either be quite safe in explosive currents travelling at high velocities, or one that would be immediately extinguished in coming in contact with explosive gas.

The coroner then directed the jury upon the evidence.

The jury, after deliberating for an hour and a quarter, brought in the following verdict: "We find that the deceased came to their death from an explosion of fire-damp in the Ferndale Colliery, on the 10th of June last; but we have not sufficient evidence to satisfy us as to where it arose. We are of opinion that the air was not properly distributed over the whole of the pit, and that the wind-ways were not of sufficient size. We regret that we should have to investigate another explosion in this colliery so soon after the terrible catastrophe of 1867. We regret also that the suggestions of the jury on that occasion have not all been fully carried out by the manager and officials of the pit. The evidence shows a lamentable want of care on the part of the officers of the pit. We beg to offer the following suggestions: First, That a Government inspector should visit every pit once in three months, and that a sufficient number of sub-inspectors should be appointed with proper authority. Second, we think that all officers having the charge of collieries should undergo an examination and obtain a certificate of their qualifications before they are allowed to undertake their duties. Third, we recommend that all old workings be filled up immediately after they are abandoned. Fourth, we recommend that the resident manager should have the sole control and management of the workings of the mine."

The fifth explosion occurred on the 17th of July in the Pontyclerc Colliery, Carmarthenshire, belonging to Mr. John Lloyd, resulting in the loss of one life.

This colliery is not a fiery one, but a small quantity of gas had become lodged in a certain abandoned part of the colliery, which was ignited by the deceased.

The sixth explosion occurred in Ynisiw Colliery, Rhondda Valley, belonging to the Troedyrhiew Coal Company, on the 6th of August, resulting in the loss of one life.

This colliery is not of a fiery kind, but, from some derangement or other, a small quantity of gas had been lodged, which was also ignited by the deceased.

The seventh explosion occurred in the Hendreforgan Colliery, Swansea Valley, belonging to Mr. Alexander Bain, on the 11th of November, and at the inquest I gave the following evidence :—

Swansea, 18th November, 1869.

Since the explosion I have made two careful inspections of the Hendreforgan Colliery, to ascertain the cause of the explosion there on Thursday, the 11th instant, resulting in the loss of six lives.

The colliery is won by a slope (engine plane) or bully from the surface, falling from 12 to 20 inches per yard, and is about 400 yards long, intersecting some six or seven veins of coal, three of which are now being worked, namely ; the Little Vein, the Big Vein, and the Brass Vein ; and the explosion occurred in the last.

The colliery is worked for the most part with open lights, not safety lamps ; and the ventilation is effected by a furnace placed at the bottom of a chimney on the surface.

The total quantity of air passing into the colliery was only 3,600 feet per minute, which passed down to the letter A in one current.

At that point a split of about 1,000 feet per minute went in the direction of B, and underneath the bully to C ; the remainder, 2,600 feet, passing on to the bottom of the bully D, where that current was split, a very small portion passing up to E and F, and joining the first split at point B, the other portion passing around the face of the east level workings G and H.

All the splits or currents again joined at I, and then passed on to ventilate the workings in the Big and Little Veins.

In my opinion the quantity of air, only 3,600 feet per minute, was much too small for the proper and safe ventilation of the colliery, and its distribution or application was most defective, so much so that the gas from the old workings, F, was allowed to pass on to the bully at A, where doubtless it came in contact with a naked light, and caused the explosion.

Only a few days before the explosion occurred the ventilation of the colliery had been changed, and the air put to travel the way I have described.

Unfortunately no stopping or ganging had been placed between the bully and the letter B, (*i.e.*) between the intake and the return air course ; the result was that very little air, if any, passed round the old workings E and F, where, no doubt, gas accumulated and passed to A, and where, as already stated, it exploded.

It was doubtless a great blunder on the part of the man in charge of the colliery not to have had a stopping placed at A, which would have prevented the gas issuing on the bully at that point, and in all probability prevented the explosion.

The arrangement of the ventilation was of the worst description ; the same current of air having to pass through the workings in all the three veins, instead of supplying a fresh current of air to each.

In all my experience I have never met with a case where less knowledge of mining was brought to bear, and to that fact I attribute the explosion and loss of life.

I would strongly recommend that the colliery be at once placed under the care of an experienced mining engineer ; that the quantity of air be increased to 12,000 or 15,000 feet per minute ; and that the workings in each vein of coal be supplied with a current of fresh air.

A verdict of accidental death was returned by the jury, who recommended that my suggestions should be carried out forthwith, and the coroner severely reprimanded the owner, Mr. Alexander Bain, for entrusting the management of his colliery to an incompetent person.

The last explosion occurred in the Gadly's colliery on the 13th of December, resulting in the death of one person. The deceased was a fireman, a person who examines the interior of the colliery before the workmen go into work, and had been for many years ; but he had incautiously been making his examinations with his safety lamp top off, and fired a small quantity of gas, burning him so severely that he only survived a few days.

Falls of Stone and Coal.

The number of deaths under this head reaches 63, as against 49 in 1868, being an increase of 14.

I have in former reports stated that, as it is the custom in this district for the colliers to set their own timber in the working places, the responsibility of fixing a suitable and sufficient quantity devolves upon themselves, provided they have an ample supply always

at hand, which it is the duty of the employers to furnish, and any complaint or suspicion of an insufficient supply would receive my immediate attention.

Shaft Accidents.

The number of deaths under this head is 15, being an increase of seven on last year.

Eleven of these accidents were caused by the deceased falling whilst engaged in or passing through the shafts, and crossing the bottom of the shafts whilst the carriages were working, and in attempting to get into the carriages to descend after the signal had been given ; resulting in the loss of one life in each case.

Two deaths arose through the breaking of two wire ropes in sinking shafts.

In neither case had the rope done much work, but I believe their breaking was due to their having been put to work over sheaves of small diameter, which are ill adapted for wire ropes ; and the remaining two deaths occurred at the Vochrin Colliery, belonging to the Dowlais Iron Company, on the 6th of December, caused by the rope slipping off the spiral drum whilst the deceased were ascending the shaft, which is about 400 yards deep.

At the inquest I gave the following evidence in this case :—

The great feature of the spiral drum is to enable the engine to lift the loaded carriage and rope, which are of great weight in deep pits, such as the present is, without the application of any extra power ; and a capital invention it is. So far as I know, there are only five such drums at work in this district, exclusive of those at the Dowlais Iron Company's collieries. Since this accident occurred I have made a careful inspection of each of those drums, which all vary in size and position.

In my opinion, what most affects the proper and safe working of spiral drums is the angle which the rope forms between the pulley and certain portions of the drum. In the present case that angle, or deviation from a straight line, was about 1 in 36, and, in my opinion, this accident is principally due to that fact, and not to any defect of the rope, which was broken by the jerk caused by its falling from the drum. And as the drum is concealed from the sight of the engineer, I would recommend that all the men should be lowered and raised by the small engine on No. 2 shaft.

In erecting spiral drums, special care should be taken to have the rope working at as easy an angle as possible, and in no case ought it to be more out of a straight line than 1 in 80.

The jury returned the following verdict :—

“ That the deceased came to their deaths accidentally, from the rope slipping off the drum on to the shaft, and thereby causing a jerk to the rope which caused it to break. “ We recommend that the suggestions made by Mr. Truran and confirmed by Mr. Wales “ be carried out at once ; and that the suggestion of Mr. Wales, that the men for the “ future should not be allowed to pass up and down this pit, but through the other, which “ was intended exclusively for that purpose, be carried into effect.”

Miscellaneous Underground Accidents.

The loss of 20 lives has occurred under this head, as against 31 in 1868.

Eighteen from injuries by trams on engine planes, main levels, and headings ; one from an explosion of gunpowder ; and one from machinery.

In this last case it was supposed that the deceased was killed whilst engaged in oiling the machinery when working.

Two boiler explosions have occurred during the year, resulting in the loss of five lives.

The first took place on the 31st of May, at the Plough Colliery, belonging to the Powell Duffryn Steam Coal Company, causing the death of four persons.

Although the boiler had been in use for more than 20 years, owing to the good quality of iron and good water supplied, the thickness of the boiler plates was not materially reduced, but the ends were flat and not round, which construction is ill calculated to resist pressure. To the latter fact the bursting of the boiler was due, and not to any other cause. It is to be regretted that such defect in its construction had not been remedied before the said accident occurred.

The second case occurred at one of the Dowlais Iron Company's collieries, on the 29th of September, causing the death of one person.

The thickness of the iron in this boiler, although it had not been so long in work as the other, was, through having been supplied with bad water, much more reduced ;

indeed, this boiler had been reported as in an unsatisfactory state, but not dangerous; and orders were given that a new boiler was to be fixed. Unfortunately a heavy breakage of machinery occurred at another colliery, which reduced the quantity of coal raised for the supply of the works, and those in charge, not being aware of the dangerous condition of the boiler, it was determined to postpone fixing the new one (which had been conveyed to the spot) for another week.

Ironstone Mines.

Three fatal accidents have occurred during the year, resulting in the death of one person in each case, and all from falls of stone.

August 16th. David Jones, miner, was killed by a fall of stone at one of the Dowlais Iron Company's ironstone mines.

November 19th. Michael Barnett, miner, was killed by a fall of stone in one of the Sguborwen ironstone pits, Aberdare Company, belonging to Mr. Samuel Thomas; and on

December 14th. John Nicholson, miner, was killed by a fall of stone, in one of the Cyfarthfa ironstone pits, belonging to Mr. R. T. Crawshay.

I have, &c.

(Signed) THOS. E. WALES,

Inspector of Mines.

To the Right Hon. H. A. Bruce, M.P.,

Her Majesty's Principal Secretary of State,

Whitehall,

London.

List of the FATAL COLLIER ACCIDENTS, and Loss of Life arising therefrom, in the SOUTH WALES DISTRICT during the Year ended 31st of December 1869.

Date.	Name of Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.		Underground.	On Surface.
							Mines of Coal.	Explosions.		
1869. Jan. 2	1 Gwndraeth	- Llanelli	- David Watney	-	William Anthony	Pitman	-	Killed by falling down shaft whilst engaged in regulating the flow of water.	-	-
" 2	2 Lower Duffryn	- Aberdare	- P. D. S. Coal Co.	-	David Lewis	Collier	35	Killed by fall of roof	-	-
" 3	3 Forest	- Swansea	- John Glasbrook	-	Walter Evans	Ditto	-	Ditto	-	-
" 4	4 Dowlais	- Dowlais	- Guest and Co.	-	Thomas Evans	Ditto	28	Ditto	-	-
" 5	5 Plymouth	- Merthyr Tydfil	- Fothergill and Co.	-	John Griffiths	Ditto	29	Killed by fall of coal	-	-
" 6	6 Lower Duffryn	- Aberdare	- P. D. S. Coal Co.	-	J. Phillips	Ditto	31	Killed by fall of stone	-	-
" 7	7 Park Slip	- Bridgend	- J. Brogden and Sons	-	T. Williams	Ditto	32	Ditto	-	-
" 8	8 Park	- Pontypridd	- D. Davies and Co.	-	J. Williams	Ditto	-	Killed by cage whilst crossing bottom of shaft.	-	-
" 9	9 Cwmllynfell	- Swansea	- James and Aubrey	-	R. Jones	Ditto	18	Killed by trans	-	-
" 10	10 Merthyr	- Aberdare	- Aberdare Merthyr Coal Co.	-	Griffith Hughes	Ditto	47	Killed by an explosion of gas. The deceased went past the danger signal with a naked lamp.	-	-
Feb. 1	11 Forchaman	- Aberdare	- P. D. S. Coal Co.	-	H. Pickrell	Haulier	17	Killed by a fall of stone	-	-
" 3	12 River Level	- Ditto	- Fothergill and Co.	-	John James	Collier	14	Ditto	-	-
" 4	13 Glyngwrlod	- Llanelli	- Llewellyn Walters	-	John Fisher	Ditto	24	Killed by a fall of coal	-	-
" 5	14 Cwm Clydach	- Swansea	- Cory Yeo and Co.	-	Thomas Hopkins	Overman	48	Killed by a fall of stone	-	-
" 6	15 Gwellynwith	- Neath	- Evan Maddock	-	David Davies	Collier	27	Ditto	-	-
" 8	16 Nantmelyn	- Aberdare	- Mordecai Jones	-	T. Reynolds	Labourer	50	Ditto	-	-
" 9	17 Ditto	- Ditto	- Ditto	-	S. Jones	Collier	21	Ditto	-	-
" 18	18 Forchaman	-	- P. D. S. Coal Co.	-	Lewis Griffith	Ditto	42	Killed by an explosion of gas.	3	-
					William Williams	Ditto	34	Lewis Griffith and William Williams, two of the deceased, fired a shot, which was a flagrant breach of the rules of the colliery, shot firing being strictly prohibited.		-
					David Evans	Ditto	27			-
								Carried forward	4	2 11 - 2 1 - -

List of Fatal Colliery Accidents—continued.

Date.	No. of Accidents	Name of Colliery.	Where situated.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	Underground.		On Surface.							
									Explosions.	Falls of Coal.	Falls of Stone.	Blasts.	Miscellaneous.	Boilers bursting.				
1869.	19	London and Merthyr.	Hirwaun	London and Merthyr Colliery Company.	John Williams	Rider	24	Brought forward by trams on incline.	-	60	25	-	6	10	-	1	5	
" 19	20	Cwm Park	Pontypridd	David Davies and Co.	William James	Sinker	22	Killed by steel wire breaking. The rope was comparatively new, but the pulley was too small for such a rope.	-	-	-	-	1	-	-	-	-	
" 20	21	Brittdir	Neath	Dynevor Coal Co.	Thos. Williams	Collier	33	Killed by trams on engine plane. Deceased was riding, which was against the rules of the colliery, and fell off the trams.	-	-	-	-	1	-	-	-	-	
" "	22	Park	Aberdare	Hirwaun Coal and Iron Company.	William Tucker	Ditto	23	Killed whilst getting into carriage to ascend.	-	-	-	-	1	-	-	-	-	
" 25	23	Lower Duffryn	Ditto	P. D. S. Coal Company	David Evans	Ditto	32	Killed by fall of stone	-	-	-	-	1	-	-	-	-	
" 27	24	Dowlais	Dowlais	Guest and Company	Thomas Lloyd	Ditto	26	Killed by fall of coal	-	-	-	-	-	-	-	-	-	
Mar. 2	25	Bwlfa	Aberdare	Bwlfa Coal Co.	Richd. John	Collier	25	Killed by a fall of stone	-	-	-	-	1	-	-	-	-	
" 12	26	Upper Duffryn	Ditto	P. D. S. Coal Co.	Jno. Williams	Ditto	32	Ditto	-	-	-	-	1	-	-	-	-	
" 17	27	Navigation	Ditto	Nixon Taylor and Co.	Edward Davies	Ditto	14	Ditto	-	-	-	-	1	-	-	-	-	
" 20	28	Pentrefelin	Swansea	Vivian and Sons	James Luthian	Pitman	46	Killed by inadvertently attempting to pass underneath balance bob whilst working.	-	-	-	-	-	-	-	-	-	
" 26	29	Mynoed	Ditto	{ James Matthews Thos. Matthews Enoch Lewis	Ditto	Ditto	38	Killed by explosion of gas. The evidence proved that one of the deceased (Enoch Lewis) passed a danger signal with a candle, and ignited a small quantity of gas.	3	-	-	-	-	-	-	-	-	
" 27	30	Middle Duffryn	Aberdare	P. D. S. Coal Co.	John Owens	Ditto	30	Killed by a fall of stone	-	-	-	-	1	-	-	-	-	
" 29	31	Forchaman	Ditto	M. Howells	M. Howells	Ditto	20	Ditto	-	-	-	-	1	-	-	-	-	
								Carried forward	-	63	7	31	-	9	12	-	1	5

List of Fatal Colliery Accidents--continued.

Date.	Name of Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	Underground.		On Surface.														
								Explosions.	Pails of Coal.	Pails of Stone.	Sudden death.	In Shafts.	Machinery.	Miscellaneous.	Boilers bursting.									
1869. Mar. 30	32	Church	-	Pontypridd	-	Pentre Coal Company	-	Wm. Williams	-	Labourer	32	Killed by a fall of stone	-	63	7	31	-	9	12	-	-	1	5	
April 2	33	Fennydarran	-	Merthyr Tydfil	-	Guest and Co.	-	David Williams	-	Collier	13	Killed by a fall of stone	-	-	-	-	-	-	-	-	-	-	-	
" 6	34	Tydraw	-	Swansea	-	Thomas and Beddoe	-	Evan Davis	-	Ditto	36	Ditto	-	-	-	-	-	-	-	-	-	-	-	
" 9	35	River Level	-	Aberdare	-	Fothergill and Co.	-	Dan. Matthew	-	Ditto	16	Ditto	-	-	-	-	-	-	-	-	-	-	-	
" 12	36	Graigola	-	Clydach	-	Nixon and Co.	-	John Davies	-	Engineer	30	Scalded to death. A stone fell from the mountain and injured the deceased, and also broke the water and steam taps, which let the steam out of the boiler upon him; he only survived his injuries a few days.	-	-	-	-	-	-	-	-	-	-	-	-
" 21	37	St. George's	-	Llanelli	-	Sims, Willyams, Neville, and Company.	-	John Rogers	-	Collier	53	Killed by a fall of stone	-	-	-	-	-	-	-	-	-	-	-	
" 24	38	Maesy Bettws	-	Bridgend	-	Richard Jenkins	-	Wm. John	-	Ditto	25	Ditto	-	-	-	-	-	-	-	-	-	-	-	
" 26	39	Morfa	-	Taibach	-	Vivian and Sons	-	John Davies	-	Haulier	15	Ditto	-	-	-	-	-	-	-	-	-	-	-	
" 27	40	Deep Duffryn	-	Aberdare	-	Nixon, Taylor, and Co.	-	Willm. Davies	-	Door boy	18	Killed by trans	-	-	-	-	-	-	-	-	-	-	-	
May 4	41	Neath Abbey	-	Neath	-	Neath Abbey Coal Co.	-	David Davies	-	Collier	66	Killed by trans on surface	-	-	-	-	-	-	-	-	-	-	-	
" 10	42	Gadlys	-	Aberdare	-	Gadlys Iron Company	-	Wm. James	-	Ditto	19	Killed by fall of coal	-	-	-	-	-	-	-	-	-	-	-	
" 15	43	Maindy	-	Pontypridd	-	David Davies and Co.	-	James Roberts	-	Ditto	21	Killed by trucks on surface	-	-	-	-	-	-	-	-	-	-	-	
" 17	44	Dunraven	-	Ditto	-	Dunraven Coal Co.	-	James Rees	-	Ditto	53	Killed by fall of stone	-	-	-	-	-	-	-	-	-	-	-	
" 18	45	Pentrefelin	-	Swansea	-	Vivian and Sons	-	Hector Gray	-	Ditto	17	Killed by fall of coal	-	-	-	-	-	-	-	-	-	-	-	
" 22	46	Abercornboy	-	Aberdare	-	D. Davies and Sons	-	Rees Jones	-	Ditto	38	Killed by falling down shaft	-	-	-	-	-	-	-	-	-	-	-	
" 27	47	Cethin	-	Merthyr Tydfil	-	R. T. Crawshay	-	Thos. Randle	-	Ditto	22	Killed by fall of stone	-	-	-	-	-	-	-	-	-	-	-	
" 27	48	Morfa	-	Taibach	-	Vivian and Sons	-	Wm. Davies	-	Haulier	32	Killed by trans on engine plane	-	-	-	-	-	-	-	-	-	-	-	
								Thomas Moat	-	Thomas Moat	18	Killed by trans on engine plane	-	-	-	-	-	-	-	-	-	-	-	
												Carried forward	-	-	-	-	-	-	-	-	-	-	-	
													-	63	9	41	-	9	14	-	4	5		

List of Fatal Colliery Accidents—continued.

Date.	No. of Accidents.	Name of Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	On Surface.	
									Underground.	Boiler bursting.
1869. May 28	49	Dunraven	Pontypridd	Dunraven Coal Co.	David Rees	Hitcher	80	Brought forward Killed by falling under carriage	4	2
,, 31	50	Abergwain	Aberdare	P. D. S. Coal Co.	David Griffiths George Rose Dd. Lewis David Richards	Collier Stoker Labourer Collier	34 31 22 17	Killed by boiler explosion on surface. The boiler had worked for more than 20 years, and was of bad construction, having two flat ends, one of which gave way.	-	1
June 2	51	Hirwaun	Aberdare	Hirwaun Coal and Iron Company.	Willm. Evans	Collier	18	Killed by a fall of stone	-	1
,, 7	52	Castle Park	Merthyr Tydfil	R. T. Crawshay	Dd. Williams	Hitcher	38	Killed by falling down shaft	-	1
,, 9	53	Ferndale	Pontypridd	David Davies and Co.	John Evans	Collier	24	Killed by fall of stone	-	1
,, 10	54		Ditto	David Davies and Sons	James Jones and 52 others.	Colliers	50	Killed by an explosion of gas from a blower.	58	-
,, 12	55	Cederton	Neath	Evans and Bevan	John Jones	Collier	27	Killed by a fall of stone	-	1
,, 16	56	Navigation	Aberdare	Nixon, Taylor, and Co.	J. Rees	Ditto	62	Ditto	-	1
,, 17	57	Llynw.	Bridgend	Llynni Iron Co.	J. Davies	Ditto	27	Killed by trams on engine plane	-	1
,, 21	58	Cwm Neol	Aberdare	P. D. S. Coal Co.	J. Kersley	Labourer	56	Killed by a fall of stone	-	1
,, 29	59	Penyrh	Cardiff	Booker and Co.	Daniel Lewis	Haulier	15	Killed by trams	-	1
,, 29	60	Navigation	Aberdare	Nixon, Taylor, and Co.	John Long	Pitman	28	Killed by stone in shaft	-	1
July 6	61	Lower Duffryn	Aberdare	P. D. S. Coal Co.	John Hayard	Collier	27	Killed by attempting to get on to carriage at bottom of shaft.	-	1
,, 12	62	Abernant	Ditto	Fothergill and Co.	John Thomas	Ditto	28	Killed by a fall of coal	-	1
,, 16	63	Neath Abbey	Neath	Neath Abbey Coal Co.	Jno. Williams	Ditto	25	Ditto	-	1
,, 17	64	Pontyclerc	Llanely	John Lloyd	Daniel Watkins	Ditto	63	Killed by an explosion of gas	-	1
,, 27	65	Cwm Clydach	Swansea	Cory Teo and Co.	Wm. Davies	Ditto	28	Killed by a fall of stone	-	1
								Carried forward	58	4
									17	3
									-	4

List of Fatal Colliery Accidents—continued.

Date.	No. of Accidents.	Name of Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.						
								Underground.	On Surface.	Misfortune.	Misfortune.	Misfortune.	Misfortune.	
1869.	6	Ynisietho Bryngwyn	-	Pontypridd - Llanelli	Wm. Davies - John Bassett	Collier - Door boy	29	Brought forward	-	58	4	17	6	3
" 17	67	Coedcae Bwlfa	-	Pontypridd - Aberdare - Ditto	Evan Williams - David Hughes - Wm. Allen	Collier - Ditto - Weightman	13	Killed by explosion of gas	-	1	-	-	-	4
" 23	68	" 69	Forchaman	Troedyrhw Coal Co. Sims, Willyams, Nevill, and Co.	-	-	-	Killed by a fall of coal	-	-	-	-	-	-
" 31	70			Coedcae Coal Co. Bwlfa Coal Co. P. D. S. Coal Co.	-	-	-	Killed by a fall of stone	-	-	-	-	-	-
Sept. 4	71	Bute Merthyr - Cwm Neol	-	Pontypridd - Aberdare - Ditto	Marquis of Bute - P. D. S. Coal Co.	Wm. Price - Jas. Hesse	19	Killed by a fall of stone	-	-	-	-	-	-
" 72	72	Ditto	-	Ditto	Ditto	Ditto	23	Diutto	-	-	-	-	-	-
" 73	73	Pool	1	Llanelli	Mason and Elkington	Ditto	12	Diutto	-	-	-	-	-	-
" 9	74	Bute Merthyr	-	Pontypridd - Merthyr Tydfil - Ditto	Marquis of Bute - Guest and Co. - Ditto	Ditto	32	Killed by trams	-	-	-	-	-	-
" 11	75	Dowlais	-	Dowlais - Ditto	Guest and Co. - P. D. S. Coal Co.	Jas. Stephens - David Pugh	22	Killed by firing a shot	-	-	-	-	-	-
" 17	76	Ditto	-	Aberdare	Dowlais Iron Co.	T. Jenkins - Thos. Thomas	14	Killed by a fall of coal	-	-	-	-	-	-
" 17	77	Lower Duffryn	-				31	Killed by a fall of stone	-	-	-	-	-	-
" 14	78						48	Scalded whilst applying water to extinguish a fire.	-	-	-	-	-	-
" 79	79	Bryncoch	-	Cardiff - Bridgend	Thos. Williams and Co. Llynvi Coal Co. Penygraig Coal Co. Star Coal Co. Dowlais Iron Co.	W. Davies - J. Thomas - T. Jenkins - J. Williams	55	Killed by a fall of stone	-	-	-	-	-	-
" 16	80	Llynvi	-	Pontypridd - Kidwelly	-	Ditto	-	Diutto	-	-	-	-	-	-
" 21	81	Penygraig	-	Merthyr Tydfil -	-	Ditto	-	Diutto	-	-	-	-	-	-
" 24	82	Star	-		-	Ditto	-	Killed by trams	-	-	-	-	-	-
" 27	83	Dowlais Iron	-		-	Engine tender.	22	Killed by boiler explosion	-	-	-	-	-	-
" 30	84	Oakwood	-	Bridgend -	W. Davies - E. Evans	Collier -	-	Killed by the rope breaking, owing, I think, to the sheave or pulley being too small.	-	-	-	-	-	-
Oct. 4	85	Aberaman	-	Aberdare - Neath	P. D. S. Coal Co. Dynesvor Coal Co.	Door boy - Collier -	13	Killed by trams	-	-	-	-	-	-
" 6	86	Dynevor	-		C. Evans - W. Jones	-	-	Killed by an explosion of gas	-	1	-	-	-	-
								Carried forward	-	60	6	25	-	6 10 - 1 5

List of Fatal Colliery Accidents—continued.

Date.	No. of Accidents.	Name of Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	Underground.		On Surface.							
									Explosions.	Falls of Coal.	Falls of Stone.	Subocation.	In Shaft.	Miscellaneous.	Machinery.	Miscellaneous.	Boilers bursting.	
1869.	8	87	Pentrech	—	Booker and Co.	—	W. Jones	Brought forward	-	63	9	41	-	9	14	-	4	5
"	9	88	Cwmaman	Aberdare	W. Thomas	—	T. Miles	Killed by a fall of stone	-	-	1	-	-	-	-	-	-	-
"	11	89	Dunraven	Pontypridd	Dunraven Coal Co.	—	D. Jones	Ditto	20	Ditto	-	-	-	-	-	-	-	-
"	12	90	Neath Abbey	Neath	Nearh Abbey Coal Co.	—	S. Morgan	Ditto	36	Crushed by the trams	-	-	-	-	-	-	-	-
"	13	91	Forchaman	—	P. D. S. Coal Co.	—	T. Williams	Ditto	—	Killed by trams	-	-	-	-	-	-	-	-
"	19	92	Aberdare	R. Fothergill and Co.	J. Davies	—	J. Davies	Collier	15	Killed by trams	-	-	-	-	-	-	-	-
								Collier	—	Killed by a fall of stone	-	-	-	-	-	-	-	-
Nov. 1	93	Abercwmboi	Aberdare	David Davies and Son	—	Enoch Thomas	Labourer	24	Killed by trams on incline plane	-	-	-	-	-	-	-	-	-
" 2	94	9 Feet	Do.	R. Fothergill and Co.	W. Thomas	—	Rees Thomas	Collier	27	Killed by a fall of stone	-	-	-	-	-	-	-	-
" 4	95	Birch Rock	Pontardulais	Birch Rock Colliery Co.	—	Thos. Thomas	Ditto	55	Killed by trams	-	-	-	-	-	-	-	-	-
" 5	96	Dowlais	Dowlais	Guest and Co.	—	Thos. Griffiths	Ditto	35	Killed by fall of stone	-	-	-	-	-	-	-	-	-
" 11	97	Blaengwawr	Aberdare	David Davies and Co.	—	Marg. Daniel	Labourer	17	Killed by falling down shaft	-	-	-	-	-	-	-	-	-
" "	98	Hendreorgan	Ystalyfera	Alexander Bain	—	Rich. Nicholas	Collier	36	Killed by explosion of gas	-	-	-	-	-	-	-	-	-
" 17	99	Forch Neol	Aberdare	—	Wm. Hopkins	Ditto	30	-	-	-	-	-	-	-	-	-	-	
" 100	Bryngwyn	Llanelli	—	Thos. E. Jones	—	Thos. E. Jones	Ditto	25	-	-	-	-	-	-	-	-	-	
" 23	101	Cwmllwynfell	Swansea Valley	Sam'l. Arthur	—	Sam'l. Arthur	Ditto	20	-	-	-	-	-	-	-	-	-	
" 30	102	Aberdare	Aberdare	Wm. Davies	—	Wm. Davies	Ditto	11	-	-	-	-	-	-	-	-	-	
" 30	103	Rhyd-yr-Heleg	Cardiff	Jno. Phillips	—	Jno. Phillips	Ditto	29	Killed by a fall of stone	-	-	-	-	-	-	-	-	-
Dec. 1	104	Blaen Rhondda	Pontypridd	Lewis Rowlands	—	Lewis Rowlands	Ditto	48	Killed by a fall of coal	-	-	-	-	-	-	-	-	-
" 2	105	Lower Duffryn	Aberdare	Willm. Morgan	—	Willm. Morgan	Ditto	15	Ditto	-	-	-	-	-	-	-	-	-
				Thos. Thomas	—	Thos. Thomas	Ditto	18	Killed by trams	-	-	-	-	-	-	-	-	-
							Dd. Williams	—	Killed by falling down shaft	-	-	-	-	-	-	-	-	-
							J. Chapel	-	Killed by trucks on surface	-	-	-	-	-	-	-	-	-
							Sinker	27	Carried forward	-	-	-	-	-	-	-	-	-
							Labourer	-		-	-	-	-	-	-	-	-	-

List of Fatal Colliery Accidents—concluded.

Date.	No. of Accident.	Name of Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.		Underground.	On Surface.	Boilers bursting.
								Miscellany.	Miscellaneous.			
1869.	Dec. 3	106	Craig-yr-wlt	Cardiff	Booker and Co.	Collier	29	Brought forward	-	69	11	19
"	4	107	Park	Pontypridd	D. Davies and Co.	Ditto	14	Killed by a fall of roof	-	-	1	5
"	6	108	Vochrina	Dowlas	Guest and Co.	Ditto	44	Killed by falling from trucks	-	-	2	5
"	7	109	Maindy	Pontypridd	D. Davies and Co.	—	19	Killed by rope breaking, falling from spiral drum.	-	-	—	5
"	13	110	Gadlys	Aberdare	Gadlys Iron Co.	John Roberts	45	Killed by fall of roof	-	-	—	5
"	17	111	Park	Slip	Bridgend and Sons	Rees Price	36	Killed by an explosion of gas ; deceased took his lamp top off.	-	-	—	5
"	29	112	Nantmelyn	Aberdare	M. Jones	Wm. Jones	48	Killed on engine plane by trams	-	-	—	5
"	30	113	Lantwit	Llantrisant	Executors of late T. Powell	James Yoss	14	Fell of roof.	-	-	—	5
"	31	114	Brumhill	Taibach	Vivian and Sons	Henry Hughes	14	Killed by trams	-	-	—	5
"	31	115	Lletty Shenkin	Aberdare	Lletty Shenkin Coal Co.	Thomas Parsons	16	Killed by trams on surface incline	-	-	—	5
						David Evans	18	Killed by machinery underground	-	-	—	5
								Totals	-	70	11	52
									-	15	21	7
									-	5		

Mr. Moore's Report.

REPORT of the INSPECTOR of MINES and COLLIERIES in the EASTERN DISTRICT OF SCOTLAND, for the Year ended 31st December 1869. By RALPH MOORE, Esq.

SIR,

Glasgow, 28th February 1870.

I HAVE the honour to submit my report for the year 1869.

The quantity of coals raised in the district was eight millions five hundred thousand tons, and the number of men employed twenty-eight thousand. It would appear that fewer men have been employed than during the preceding year, which may be accounted for by emigration, and by the increased number required by the shale works, where shale is used for making oil.

Throughout the year the men worked quietly, and during an extraordinary depression of the coal trade made fair wages. I have received from coal masters details of the wages made by colliers in various localities of the district:—

	£ s. d.
In Lanarkshire, in the Wishaw and Hamilton districts, in a seam five feet thick, rooms 12 feet wide, stoops 20 yards square, a man, during the year worked 259 days, and "hewed and filled" 725 tons coal and dross, for	72 6 6
In the same district, under similar circumstances, another man worked 832 tons in 261 days, for	52 17 6
Another, 667 tons in 247 days, for	43 8 3
In Airdrie, seam of coal 4 feet, rooms 12 feet, stoops 12 yards, a man (52 years of age) in 249 days worked 850 tons, for	51 3 10
In Fife, in a seam four feet thick, worked by the long-wall method, a collier worked 253 days, and hewed and filled 786 tons, for	46 19 2
In Midlothian, seam of coal 3 feet, long-wall, a man worked 243 days, and hewed and filled 515 $\frac{1}{2}$ tons of coal for	51 10 4

The earnings of a boy from twelve to fourteen years of age, when working with his father, will be about one half, and from fourteen to sixteen, three fourths of these sums.

Accidents.

Fifty-five fatal accidents were reported to me. They were fatal to fifty-eight persons, being fifteen more than the previous year. The excess was in falls of roof and coal, and in miscellaneous accidents.

Ventilation.

There is a progressive improvement in the ventilation of collieries in this district, more particularly about Hamilton and Wishaw, where the extensive application of the Newcastle system of leaving large pillars, requires more air. Larger ventilating furnaces and larger air-ways are now to be found, and the underground managers and overmen, (who are better paid than they used to be,) are becoming more alive to the importance of large air-ways and good stoppings, and also to the principles of ventilation. Ventilating fans, driven by steam power, have not as yet been introduced into the district. There was one fatal accident by an explosion of fire-damp, that of a man who died a few days after he was burned by an explosion of gas at Cornsilloch Colliery, Hamilton, in March last. He was working in a bratticed place, and was re-entering his place, after fifteen minutes' absence, with his naked light, and ignited some gas which had accumulated during his absence. The pit had newly reached the coal, the door stoop was not turned, and the ventilating arrangements were only temporary.

In December 1868, a collier named Millar went into his working place in Merryton Colliery with his naked light and ignited some firedamp which had accumulated in it during the night. He died in the beginning of last year from the effects of the injuries received, and in June last, Alex. Matthie, the fireman, was tried before Sheriff Bell and a jury for permitting him to enter the place when gas was in it. He was fined ten pounds.

Falls of Roof and Coal.

One hundred and forty accidents from falls of roof and coal were reported to me. Twenty-nine of these were fatal to thirty persons.

Of these thirty persons, twenty-seven were colliers and others who were engaged at the working faces, where the coal and roof required only temporary support, which by the special rules should have been seen to by the sufferers themselves, and three were persons who were injured while repairing the permanent roads.

The whole of these fatal accidents and many of the others were investigated by me. They occurred indiscriminately in good and bad roofs, but mostly in good roofs; not from want of scientific knowledge, for none was needed, but simply from props not being judiciously and timely applied. The sufferers were under the impression that no supports were required, or at all events that the roof or coal would stand until they had more leisure to attend to it. For example, the following letter, addressed to me by a coal master, describes a very common occurrence:—"I beg to subjoin details of an accident mentioned in the accompanying report. The subject of the accident, John Cochrane or Martin, works in this colliery in the splint coal seam, the only one at present being worked, in the north workings, in the immediate vicinity of the place where John Peat was slightly burned by firedamp, and which was the subject of your last inspection here. The roof is very irregular, consisting of an undulating sandstone, which sometimes rests on the coal, and at other times rises to a considerable height above it, the intervening space being only separated from the coal by a thin falling from two to four inches thick or thereby. A piece of this 'falling,' twenty inches by thirty-two inches, by four inches or thereby, was yesterday morning hanging loose at his face, in the centre of his place. A neighbour, who happened to be in Cochrane's place, warned him to take the piece down, as it was evidently unsupported and dangerous. He admitted the fact, but as he was afraid of 'losing his ben' [not having coals ready when the drawer came in for them], he proceeded first to take down a piece of coal on the right-hand side of his place. After doing so, and while waiting for the empty hutch, he sat down to 'hole' under the loose piece of stone which shortly after fell and injured him."

The special rules of this district hold the collier bound (without extra payment) "to prop and secure the roof and strata above and along the coal faces, at which they shall be employed, or under which they have occasion to be, in their operations of working and filling the coals." This rule is framed on the assumption that as the propping at the faces is only temporary, and mainly for the safety of the collier himself and those who work with him, he being constantly in the place, and watching the changes continually going on, will know best what to do and when to do it, and at any rate self-preservation will make him keep the place secure.

Close attention to this source of accident leads me to the conclusion that the system is defective, because any time occupied by the collier in supporting the roof he looks upon as so much time lost, and he does run unnecessary risks by delay, as shown above. Besides, it is not the fact, nor is it to be expected, that all colliers are sufficiently experienced to know when the roof requires support.

The practical working of the rule is, that whether the collier is a skilful or an ignorant man, the securing of the roof and coal where he works is left entirely under his control. The result is that, whereas in other accidents the increased supervision by the colliery officials, under the General and Special rules introduced by the Legislature, has effected a decrease in the deaths, in falls of roof and coal, where no supervision exists, the death rate is as high as ever it was.

This leads me again to repeat the suggestion that deaths from falls of roof and coal would be fewer if experienced men were employed to visit the men's places at intervals during each shift, to set props, or at least to see that sufficient props were put up to the roof and coal. I have no hope that a rule of this kind will be adopted by all, without legislative enactment. It would add slightly, in many cases, to the cost of producing coals, but it would diminish loss of life.

In Shafts.

The number of fatal accidents in shafts last year was eight, which were fatal to eight persons. In all of them the parties themselves were much to blame. Three of the accidents were in sinking pits; one from a mistake in signalling; one by a man foolishly attempting to slide on a rope down a pit fifty fathoms deep; and three by persons in daylight coming in with "empties" to the pitmouth, and without paying attention as to

whether or not the cage was there, running them into the open shaft, and falling down the pit along with them. In two of these cases there were self-acting gates, but they were on the upper scaffold, while the hutches were run on at the level of the surface.

Miscellaneous Accidents Underground.

The number of fatal accidents was ten. Of these, four were on inclined planes, one was crushed while greasing machinery in the pit, three were crushed by the cage while putting on tubs at the pit bottom, and one was suffocated by chokedamp in a sinking pit. These accidents were all carefully examined by me. With regard to the mistakes in signalling, there was the usual amount of contradictory evidence, the pitheadman and engineman saying one thing, and those at the pit bottom the reverse. The signalling arrangements were all effective, and as good as could be made.

Accidents on the Surface.

The fatal accidents on the surface were nine. Three persons were killed by the engine getting out of gear with the winding drum, and the rope "running amain." These accidents will always happen so long as geared engines are made to do the double duty of pumping and winding by the present arrangement. Close attention to the matter has convinced me that it is the arrangement that is at fault, and that the most experienced and cautious engineman fails to guard against accidents with them. There are many contrivances, more or less effective, for keeping the wheels in gear, but, so far as I know, none are so good as having separate engines for pumping and winding, so that the drum is always in gear. This arrangement is becoming extensively used, and it is my constant practice to recommend its adoption.

The other accidents were mainly caused by the fault of the sufferers themselves, and do not call for special remark.

I have, &c.
(Signed) RALPH MOORE,
The Right Hon. H. A. Bruce, M.P.,
&c. &c. &c.
Inspector of Mines.

List of the FATAL COLLIER ACCIDENTS, and Loss of Life arising therefrom, in the EAST SCOTLAND DISTRICT, during the Year ending 31st December 1869.

Date	No. of Accidents	Name of Colliery	Where situate.	Owners or Agents.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	Number of Lives Lost.			
									Explosions	Falls.	In Shafts.	Miscellaneous.
1869.												
Jan. 15	1	Home Farm	Hamilton Larkhall	Hamilton & McCulloch - Merry and Cunningham -	Au. McMinn - Jas. Quinn	Collier Sinker	-	By fall of coal while taking out stoops Fell out of sinking kettle while ascending shaft.	-	1	-	1
," 19	2	Ashgill	-	Provanhall Coal Company	Hugh Burns	Roadman	-	Fell part way down pit. Mistake of signals.	-	1	-	1
," 23	3	Aitkenhead	Bailieston	Wishaw Iron Co.	Jno. Morton	Ditto	-	By fall of coal while examining pillar.	-	1	-	1
Feb. 2	4	Shieldmuir]	Wishaw	Marquis of Lothian	Jas. Paterson	Collier	-	By upper leaf of great seam falling on him while working under it.	-	1	-	1
," 3	5	Newbattle	Dalkeith	Forrester and Robson	George Bennie	Ditto	-	By fall of roof at face. Long wall. Seam 30 inches. Roof good.	-	1	-	1
," 18	6	Roughrigg	Airdrie	N. Cochrane and Co.	Thos. Cairnduff	Ditto	-	Explosion of firedamp -	-	1	-	1
Mar. 1	7	Cornhill Loch	Larkhall	N. Cochrane and Co.	John Chalmers	Ditto	-	Fall of roof at face. Coal 30 inches. Long wall.	-	1	-	1
," 9	8	Lodge	Slammanan	John Watson	-	Ditto	-	Jammed by a fall of top coal -	-	1	-	1
," 13	9	Wishaw	Wishaw	George Halley	Drawer	Ditto	-	Crushed by cage at pit bottom. Mistake of signals.	-	1	-	1
," 16	10	Stoneraigs	Coltness	A. Dalziel	Drawer	-	-	By the coal he was holing rolling over on him.	-	1	-	1
," 17	11	Lochfittie	Dunfermline	Peter Webster	Collier	-	-	Fall of roof at face -	-	1	-	1
," 18	12	Niddrie	Edinburgh	John Grieve	Drawer	-	-	Fall of roof while removing pillars -	-	1	-	1
," 20	13	Overton	Wishaw	Coltness Iron Co.	J. McCourt	Collier	-	Fall of roof while removing pillars -	-	1	-	1
Apr. 2	14	Alloa	Alloa	Alloa Coal Co.	Wm. Ramayre	Ditto	-	Fall of coal while removing pillars -	-	1	-	1
May 1	15	Coltness	Wishaw	A. G. Simpson	R. Bradley	Ditto	-	Fall of "brushing" at road head -	-	1	-	1
," 16	16	Kinnel	Boness	George Wilson and Co.	Richd. Grant	Ditto	-	Fall of roof in splint coal at face -	-	1	-	1
," 17	17	Rosehall	Airdrie	Robt. Addie and Sons	Brusher	Brusher	-	Fall of brushing while working at it -	-	1	-	1
," 18	18	Walliford	Musselburgh	J. and C. Christie	Contractor	Contractor	-	Fall in main road while receding it -	-	1	-	1
," 19	19	Carmbrae	Coatbridge	Merry and Cunningham	J. McCorachie	Collier	-	Fall of roof at face -	-	1	-	1
," 11	20	Benhar	Whitburn	George Simpson	Rob. Baxter	Pitheadman	-	Winding drum got out of gear and ran amain. He was struck by rope.	-	1	-	1
," 19	21	Edgehead	Dalkeith	Jno. Christie	-	Collier	-	Hurt by a piece of stone falling off roadside. Died in infirmary.	-	1	-	1
								Carried forward	-	1	16	2
										1	1	1
										21		

List of Fatal Colliery Accidents—continued.

Date.	No. of Accidents.	Name of Colliery.	Where situate.	Owners or Agents.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	Number of Lives lost.					
									Explosion				Misfortune	
									Fall.	In Shaft.	Misfortune	Explosion		
1869.	22	Carfin - Overdale	Motherwell - Larkhall	W. S. Dixon - R. Wotherspoon	-	D. Morrison - Wm. Adair	-	Brought forward -	1	16	2	1	1	21
May 24	23	Carfin - Overdale	Motherwell - Larkhall	W. S. Dixon - R. Wotherspoon	-	Stoker - Labourer	-	Killed while greasing a beam in shaft -	-	-	1	-	1	1
," 26						Jas. Trotter	-	Ran "empty" into shaft when cage was not there, and fell in.	-	-	1	-	1	1
June 4	24	Carfin - Lumpinians	Motherwell - Lochgelly	-	-	Collier	40	Fall of coal	-	-	1	-	1	1
" 7	25	Lumpinians	Wishaw Iron Co.	W. S. Dixon - Lumpinians Iron Co.	-	Ditto	-	Fall of roof	-	-	1	-	1	1
" 15	26	Wishaw	Wishaw	Wishaw Iron Co.	-	Ditto	-	Fall of roof	-	-	1	-	1	1
" 19	27	Knownble	Wishaw	Scott and Gilmour	-	Ditto	30	Fall of coal at face	-	-	1	-	1	1
" 24	28	Netherton	Airdrie	Ditto	-	Ditto	-	Fall of stone at face	-	-	1	-	1	1
" 25	29	Avonhead	-	Avonhead Coal Co.	-	Ditto	-	Engine out of gear and men ran down pit.	-	-	1	-	1	1
Q 3	30	Ditto	Dundonald	Ditto	-	Ditto	-	Ditto	-	-	1	-	1	1
July 1	31	Dundonald	Lochgelly	Mr. Naysmith	-	Collier	42	Ran down on incline. Place of refuge close by.	-	-	1	-	1	1
" 3	32	Alloa	Alloa	-	-	Roadsman	40	Fall of stone while repairing road	-	-	1	-	1	1
" 23	33	Niddrie	Edinburgh	J. and C. Grieve	-	Labourer	25	Killed on incline. Mistake of signals	-	-	1	-	1	1
" 30	34	Reechnall	Airdrie	R. Addie and Sons	-	Brusher	40	Fall of brushings he was working at	-	-	1	-	1	1
Aug. 18	35	Middhill	Holytown	Hurl and Young -	-	Boy	13	Ran "empty" in wrong opening and fell down pit.	-	-	1	-	1	1
" 19	36	Wishaw	Wishaw	Wishaw Iron Co.	-	Collier	48	Fall of roof	-	-	1	-	1	1
" 25	37	Newbattle	Dalkeith	Marquis of Lothian	-	Ditto	15	Ran on to cage while it was in motion and crushed by it.	-	-	1	-	1	1
Sept. 3	38	Haywood	Wilsonton	Haywood Coal Co.	-	Ditto	33	Squeezed by hutch on incline	-	-	1	-	1	1
" 8	39	Cowdenbeath	Dunfermline	Smith Sligo -	-	Ditto	52	Fall of roof at face	-	-	1	-	1	1
" 11	40	Shieldmuir	Motherwell	Wilsonson and Co. -	-	Ditto	35	Fall of stone	-	-	1	-	1	1
" 17	41	Minwood	Holytown	Jno. Christie	-	Ditto	18	Fall of roof at face	-	-	1	-	1	1
" 20	42	Quarter	Hamilton	Colin Dunlop and Co.	-	Stinker	42	Rope caught on bunton and fell on him.	-	-	1	-	1	1
" 22	43	Elphinstone	Musselburgh	Deans and Moore	-	Drawer	14	Squeezed while putting something on cage in motion.	-	-	1	-	1	1
" 28	44	Benhar	Whitburn	R. Addie and Sons	-	Pitheadman	52	Ran hutch into wrong side of shaft and fell after it.	-	-	1	-	1	1
						Carried forward	-	1	27	6	6	4	44	

List of Fatal Colliery Accidents—continued.

Date.	Name of Colliery.	Where situate.	Owners or Agents.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	Number of Lives lost.				
								Explosions.	In Shafts.	Miscellaneous.	Above Ground.	Total.
1869.												
Oct. 9	45	Newbattle	Dalkeith	J. Buchan	Labourer	27	Brought forward	1	27	6	6	44
,"	46	Ditto	Ditto	J. Shimm	Ditto	50	While putting crane in single gear with weight on, it over-powered six men, of which these were two.	—	—	—	1	1
"	47	Castlehill	Carluke	J. Cameron	Sinker	40	Suffocated by chokedamp	—	—	—	1	1
"	48	Drumshangie	Airdrie	Law and Brand	Drawer	30	Crushed by cage at pit bottom.	—	—	—	1	1
"	49	Limerigg	Shammanan	Robert Baird	Collier	—	Mistake of signals.	—	—	1	—	1
"	50	Balquhatsone	Ditto	Jno. Watson	Collier	22	Crushed by cage while attempting to cross the bottom.	—	—	1	—	1
"	51	Garrisonhill	Wishaw	Wm. McGhie	Ditto	17	Fall off rope which he was attempting to slide down.	—	—	1	—	1
"	52	Stepends	Airdrie	R. Know	Ditto	17	Jammed by hatches on incline. He had no business there.	—	—	1	—	1
"	53	Glempin	Douglas	J. McLean	Engineer	40	Fell in among machinery.	—	—	1	—	1
"	54	Townhill	Dunfermline	J. Jas. Milne	Engine	20	Fell in between wheels, while greasing them in motion.	—	—	1	—	1
"	55	Ditto	Ditto	R. Laird	Collier	25	Fall of roof	—	—	1	—	1
Dec. 18	56	Cleland	Holytown	Monkland Iron Co.	Ditto	29	Fall of roof	—	—	1	—	1
"	57	Kinnel	Boness	Kenneil Iron Co.	R. Grant]	95	Struck on head by a block falling from pulley.	—	—	1	—	1
Oct. 15	58	Brownieside	Airdrie	Shotts Iron Co.	G. Smillie	13	Fall of stone from roof of working place.	—	—	1	—	1
						42	Fall of hanging scaffold	—	—	1	—	1
								1	30	8	10	58

List of Fatal Accidents and Loss of Life in Ironstone Mines.

Apr.	14	Shotts	Shotts	Shotts Iron Co.	Pat. Moore	Collier	20	Fall of roof	—	—	—	—
									—	1	—	—

Mr. Alexander's Report.

REPORT upon the INSPECTION of MINES in the WESTERN DISTRICT of SCOTLAND, for the Year ended 31st December 1869.—By WILLIAM ALEXANDER, Esq.

SIR,

Glasgow, 28th February 1870.

I HAVE the honour to lay before you my Fourteenth Annual Report upon the mines and collieries in the Western Mining District of Scotland.

No marked changes have taken place about these works for the period referred to, and comparatively few extensions or new fittings have been made. Upon the whole the changes have not been appreciable, but, owing to the depressed state of trade during the early part of the year, the gross output of coal has rather decreased. As compared with former years, it does not appear that the risks or dangers which beset those who labour in mines have been much diminished; nevertheless it is satisfactory to observe the gradual introduction and extension of some of the more approved measures for the general safety. These improvements, it is to be regretted, do not advance with the rapidity which those anxious to provide greater security for the persons engaged in and about mines could desire, but unquestionably they *do* extend; and by bringing prominently into notice some of the more valuable amendments as from time to time they are produced, it may be expected that ultimately the range of danger will be narrowed, and underground labour will become less perilous and insecure.

From returns made to me by nearly every colliery owner in the district, I find that the quantity of coal and dross raised during 1869 was 6,137,043 tons; and the number of persons engaged in producing and delivering it at the surface was 20,007.

Of these, 251 received serious personal injury, and 39 of them died from the effects of such injuries. These saddening occurrences happened apparently to the practised and discerning in much the same proportion as to the young and inexperienced.

Of those fatally injured 20 were married men, whose ages varied from 23 to 63 years, 13 were single, and six were boys.

A glance at the schedule No. 1. which accompanies this, being a classified record of the fatal accidents, will show the prevailing difficulties and dangers which those who work in the mines of this district have to contend with.

From explosions of firedamp 4 were fatally injured,

„ falls of coal and roof	28	„	„	„	and
„ falling into shafts, &c.	6	„	„	„	
„ accidents above ground	1	was	fatally	injured.	

The fatal explosions of firedamp, though few, happened *nearly all* in the most blundering and careless manner possible. In two of these cases the firemen were the victims, and, without doubt, they neglected to take the ordinary and well-known precautions to protect themselves, and which as firemen they were bound to observe. The first, while busied putting up a few yards of "brattice" in a place which had been abandoned for a short time, kept his naked lamp burning so near to him that it ignited a small quantity of gas which lay there, and which he was in the act of displacing at the time. The second was night fireman, and before allowing the "brushers" to descend, he in making an examination of the works discovered that the ventilation was defective. He dismissed the workmen for the night, the pit not being in a fit state for them to work in; but after a few hours he again descended with an open light, it is supposed for the purpose of making a further examination, when an explosion took place near to the bottom of the shaft. In the third case the firemen failed to examine the mine before allowing the workmen to enter, and an explosion was the result. In three out of these four cases the accidents were no doubt clearly caused by the neglect or incaution of the firemen, which leads me again to repeat that the persons undertaking to perform this description of work have a very important duty to discharge. The special rules bind them to make a careful examination of every working place before allowing the workmen to enter them; but as the fireman generally makes his examination alone, there is no one to check him. It would, in my opinion, tend to perfect this division of underground management if the

fireman was compelled, by special rule, to leave his mark with chalk, or the date of his examination, every morning upon the face of every working place.

The situation of fireman is one of the most important about a colliery ; and the appointment should be of such value as to induce steady workmen to compete for it, and also prepare themselves for properly discharging the weighty duties connected therewith. Instead of which, I have known in some cases that the person acting as fireman wrought also daily as a collier, but got a few shillings a week for performing the duty before commencing his work. When such a mode of examination is authorized it is not surprising if irregularities take place in the mines where it is practised ; and, under such circumstances, there can be no doubt that the general discipline of the mine suffers and becomes relaxed. A system so objectionable, however, can only exist under the most sparing or ignorant management, and is not once tolerated at properly managed collieries.

The loss of life from falls of coal and roof, forming upwards of 71 per cent. of the whole, has been greater than during any of the past fourteen years. Although not uniform they take place in all mines, and under every system of working. The variations of roof do not admit of a correct comparison being made, otherwise the question might be fairly considered as to whether the roof should be secured by persons making periodical visits, as is done in some districts, or by the workmen themselves, who are constantly employed at the face, and where nearly all such accidents happen.

As very often a slight movement in the roof is the only warning or premonitory symptom which precedes a fall, it has always appeared to me that the person working continuously in the place ought to be most alive to the indications and best acquainted with the local peculiarities. He may occasionally neglect to secure himself, but it is difficult to conceive that any one making an occasional visit would be more likely to detect or anticipate danger. It has also the effect of fostering self-reliance, a quality which underground workmen, above all others, ought to possess, they being often unavoidably placed in circumstances where action requires to be taken without much delay or deliberation.

For falls of coal that is coal, falling during the time it is being worked, no management can do more than endeavour to enforce a systematic course of "gibbing" the coal, while undermining or working under it. And for the prevention of falls of roof, which, in fatal cases, nearly always happen at the face, I cannot suggest anything better than what I have frequently advised, that a systematic course of propping with wood should be observed, without reference to whether the roof may at the time be supposed to require it or not. It is easy to conceive that such a regulation might sometimes interfere with a workman in his place, that is, prevent him from proceeding in perhaps the most expeditious and ready mode, but apparently greater safety can only be obtained by some such system of support, so that the roof when it *does* fall, by breaking and deranging the supports, may enable the persons engaged in the place to escape, or by sufficient warning induce them to better secure it. There is no mystery about falls of roof, and there can be no doubt that if a greater quantity of timber was placed for support in a methodical manner, without reference as to whether it at the moment was required or not, this class of accidents would be diminished. In support of this I can say that of the numerous cases which happened during the past year, though many of them were beyond human control, a considerable number would have been prevented by the system of propping advised.

In shafts the accidents, six in number, have been 30 per cent. fewer than the average of the last fourteen years. This is satisfactory, and such as might have been anticipated, considering that covered cages working into guides are now nearly universally employed. Putting on or "cleeking" coal at "midworkings" in the open shaft has been discouraged ; in a few cases safety appliances have been constructed with the view of giving greater security to the persons engaged at such openings ; and at the surface moveable fences, to act in connexion with the cages, are being gradually introduced to prevent persons from falling unwittingly into shafts. These are a few of the leading improvements connected with shafts, which have been slowly extending for the last thirty years. They have so far proved efficacious, and it is to a farther extension and perfecting of these arrangements and contrivances that we may still look for a continued diminution of this class of accidents.

In the late draft bill of 1869 for the regulation of mines several important general rules were proposed. In addition to these I would suggest that another general rule should be added, prohibiting the practice of placing "tubs" upon cages in open shafts at midworkings, unless under certain conditions which would provide for the safety of the persons engaged at such works. This objectionable system is principally confined to shafts where two or more seams exist, and are being worked. But by

introducing "cross-cut" mines, as is often done, the roadways might be concentrated at the shaft to one or two seams, and in such cases a cage might be arranged to wind from each seam; or in another way, by continuing the present system of midworking, and become bound to introduce a well-contrived appliance which would in all conditions, in the absence of the cage, act as a fence upon the shaft. An illustration of such an apparatus was given in my report for 1867, and it is satisfactory to be able to inform you that it is still in operation and is being introduced at other works. Such a regulation would not restrict colliery operations generally, nor add to the cost of production, but it would at once put a stop to persons falling down shafts from "midworkings," which in the aggregate form a large number annually, and, strictly speaking, *are preventible*, and should not happen.

Again, two lives have been lost by falling into shafts from the surface. This description of accident is one of the *most preventible*, and it appears to me that all persons who require to work about pit mouths are entitled to ask and expect that the necessary precautions should be observed for their safety, namely, that a moveable fence should be constructed at every working pit. Such an arrangement is well known, and has been strongly recommended by the inspectors of mines for several years. It is gradually getting into general use, but its adoption has in several cases been quickened by the occurrence of some sad calamity which it was—when too late—painfully evident might easily have been prevented. I have directed attention to these fences throughout this district for upwards of twelve years. Probably three fourths of the pits are now fitted up with them, but from this time I propose, when such an accident takes place at any colliery where the precaution for preventing persons from falling into shafts has not been adopted, to do all I can to have proceedings taken, in so far as common law will support the charge, for culpably neglecting to make fair and reasonable provisions for the safety of the persons employed. And if it is common law that the proprietors of works are bound to use all reasonable and known appliances for the security of their workmen while engaged at a dangerous occupation, I trust that a jury will have little difficulty in arriving at the common-sense finding, that if three fourths of the proprietors of mines consider it proper and right to use a simple contrivance—which only costs a few shillings—to prevent persons from falling into shafts, that it would be no hardship to enforce such a wholesome regulation at the works of the few.

From miscellaneous causes only one person was fatally injured. He was an experienced workman, and at the time of the accident was engaged putting some empty waggons into a "back lye" at the colliery. In this case the waggons, owing to the construction of the railway, when put into motion, moved slowly, by an arrangement of switches, into the different "lyes" alongside the pit. The deceased, it appears, had at the time been shifting the switches, when the waggons came upon him, and he, either by losing his footing or otherwise, was caught and crushed under them. So far as I could learn, the sufferer, who was 60 years of age, had injudiciously persisted in attending at the work while partially incapacitated from having been indulging too freely in the use of intoxicating drink.

The fatal accidents in the ironstone mines of the coal measures, and worked in connexion with coal or with any disused or exhausted coal mine, have been eight. Of these, two were occasioned by falls of roof, three in shafts, one by the explosion of gunpowder while engaged blasting, and two from miscellaneous causes on the surface.

The non-fatal accidents from every description of mine, though slightly reduced, are numerous, and form a long and gloomy list, arranged under the usual classification.

66 were injured by explosions of firedamp.

99 " " falls of coal, ironstone, and roof.

6 " " in shafts, and

41 " " miscellaneous causes above ground.

The working of the Stat. 25 & 26 Vict. c. 79, I regret to inform you, is still unsatisfactory. In 1867 I pointed out the difficulty of enforcing compliance with it, in consequence of the mode of procedure required to be observed in the civil courts. In such cases of non-compliance, to obtain delay very often seems to be the object, and the law enables parties desirous of delay to carry it out most effectively. At present there are three cases in court, the most frivolous objections are brought forward, and possibly, after one or two years of frittering from court to court, the pits will be abandoned or, it may be, connected with others, and the proceedings will of necessity be brought to a close. I see no cure for this state of things; under existing circumstances it is creating a disagreeable feeling, and tends to retard the proper carrying out of that really wise and useful measure. In the event of a change being made upon the existing law relating to mines, I think that it would be incomplete unless it contained provisions for enforcing a more speedy observance of this particular part of it; and, probably, the most direct and

effective way would be to insert a smart fine for each offence, and a penalty of at least 5*l.* a day for every day during which the offence continues to be committed after notice thereof has been given. I have not in any case attempted in an unreasonable way to enforce this measure. There are certain preliminary operations required about a pit after being sunk, and for which a certain allowance may be granted during the time that the connexions are being *actively* made. But when parties set about laying out their works, and proceed without the slightest regard to forming the necessary communications, it is quite time to introduce some more active and decided check than the present Act provides for.

During the past five years experience of the double-shaft system the question has frequently been put as to what is the most suitable position in which to place the shafts to each other. Regarding this there is a variety of opinion. I believe, however, that the shafts should be some distance apart; at least, a great deal more than 10 feet. The form of shaft long peculiar to this district does not appear to have been affected by the late enactment. And what under the old, or single-shaft system, would have been a single shaft of 12 or 14 feet by 6, is now two, *a b* fig. 1, each 6 feet by 7, or thereby, and placed 10 feet apart.

I am satisfied that this arrangement is not the best for ventilating purposes, in consequence of the action of the cage upon the air in the upcast shaft. Hand-sketch, fig. 2, exhibits an arrangement not much more costly, but incomparably superior for the collieries of this district. The winding pit *A* is arranged on the single-shaft system as before; and the outlet shaft, situated to the "rise" at *B*, convenient to the winding machinery *C*, which may when required be taken advantage of, is used wholly as an upcast. By this system the operations at pit-bottom and at the surface are more concentrated, and conducted with greater safety and economy, and the upcast, free from the objectionable retarding movement of the cage, admits of a more effective and satisfactory system of ventilation being carried out.

Safety apparatuses in connexion with winding in shafts, the object of which is to save life in case of the winding rope breaking or getting disengaged from the cage, were introduced into this district upwards of 18 years ago; and though they apparently were calculated to protect the lives of those who required to be lowered and raised in shafts, it is doubtful if much real good resulted from the use of them. It appeared to me at the time that there was a general desire to employ them if trustworthy and could be proved to be of real benefit. However, for some years they have been comparatively out of use, and I know of only one colliery where they are at present in operation. Considering that there are upwards of 300 shafts in this district where persons are lowered and raised daily, it is creditable to those engaged in looking after the details of this particular branch of management, and must be satisfactory for them to know, that for the last seven years no fatal accident has happened about these collieries by the breakage of a winding rope. As such appliances have been frequently recommended by gentlemen anxious no doubt to diminish the risks of the persons employed in mines, I think it proper to add, speaking for myself, that I would not care to see steps taken to enforce the use of any such contrivance. Bearing in mind the facts stated, it might be prudent in the meantime to let well alone, and rather rely upon well-made and carefully looked-after winding machinery, attended to by steady and judiciously appointed enginemen. The best arranged apparatus requires to be constantly looked after, so as to keep it in a proper state of repair. Among the last important occurrences of the kind which took place here, by the cage falling away in the shaft, and with a safety apparatus known as "White and Grant's," perhaps one of the best which has been introduced, I felt satisfied that the disengaging catch had been the cause of accident.

FIG. 1.

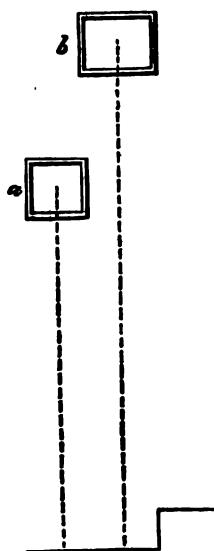
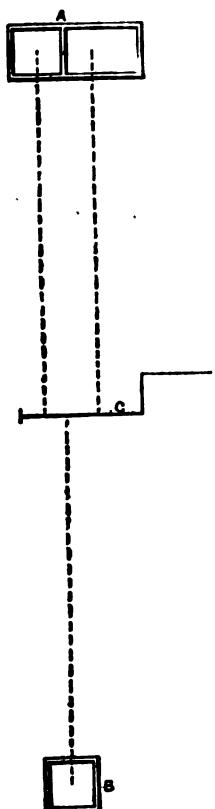


FIG. 2.



Though the improvement in the education of the boys employed underground is not very marked, undoubtedly a greater number now go to school and receive a limited education. It is questionable if boys generally will make great exertions to attend school, and, unless their parents are anxious and also determined to make them do so, it is easy to conceive that, unless there is some compulsory means used, a short and often irregular attendance may not be followed by very satisfactory results. It seems desirable that those who intend to labour in mines should, above all others, have acquired a certain amount of education in early years, and before commencing to work. The half-time system is not well adapted for mining, and it would be much better to limit the age at which boys could be employed in mines to 12 years, so that they might really acquire an elementary education, which could be amplified according to the taste or talent of the individual in after life at night schools or educational institutions, which, happily for the rising generation, are soon likely to be introduced in centres of industry, and placed within the reach of all.

I do not feel called upon to particularize many of the accidents which took place throughout the different divisions of this district for the past year. There are a few, however, which it may be of advantage to detail more fully.

Accident No. 10, Schedule No. 1, was occasioned by some misapprehension of signals on the part of the engineman.

In this case there were two seams of coal being worked at different levels. The deceased was a roadsman and general assistant, and had occasion to visit both seams. It appears that on the morning of the accident he, along with the manager, had been "signalled away" upon the cage from the lower seam. It was the intention of the deceased to go off at the upper seam, but from some cause the cage was not stopped at it. The bottomer at the upper seam, on being called upon to signal back the cage to that level, did so, and it was lowered accordingly. At this point some unfortunate misunderstanding as to signals took place, and the engine-man, instead of allowing the cage to remain steadily at the upper seam, raised it while the deceased was in the act of getting off. He was caught between the cage and the side of the shaft, and, after being dragged up a certain distance, fell away from the manager, who had partly a hold of him, to the bottom of the shaft.

The opening for getting off the shaft into the upper workings, was narrow and ill adapted for persons going off the cage at, and though it was occasionally used, particularly by the manager and his assistants, it was not the proper inlet from the shaft.

Accident No. 14, Schedule No. 1, was occasioned by the deceased getting entangled with the signal wire in the shaft, while about to repair it.

On the day of the accident the "signal wire" in the shaft had broken, near to the connexion formed with the signal hammer at the surface, and the deceased, who was one of the underground assistants, repaired it. I understand that after the repair had been made, the pit had not been worked more than an hour, when the wire broke a second time. The deceased and a neighbouring workman, for the purpose of again repairing the wire, had gone on to the cage, and were in the act of being drawn up when the broken wire, hanging partially loose in the shaft, got entangled with the cage, and in some way coiling round the deceased, he was drawn off the cage, and fell down the shaft a distance of 50 feet or thereby.

It was an overlook on the part of the deceased to attempt to go up the division of the shaft where the wire was hanging loose and broken, without first communicating with the engineman as to the state of things, so that he might have raised the cage slowly, and taken all necessary precautions.

Accident No. 20, Schedule No. 1, was occasioned by the deceased falling into the shaft.

It is difficult to understand how this accident happened, and as no one saw the deceased fall into the shaft, it can only be conjectured that, as his oil pourie was found close to him at the pit bottom, he had gone near to the shaft for the purpose of oiling some of the parts of the machinery, and either overbalanced, or in some way fallen in. The parts of the machinery near to the shaft, and occasionally requiring a little attention, were ill situated for getting at, and the deceased, who had long acted as engine-man, and was advanced in years, had probably exposed himself rather more than was really necessary.

Accident No. 26, Schedule No. 1, was occasioned by an explosion of firedamp.

The workings of this pit were principally confined to the broken or taking out pillars. The deceased on the morning of the accident went into his place as directed by the fireman, and continued to work therein for about six hours, when a small accumulation of gas was ignited at his open lamp, and he was injured by it, at first it was thought slightly ; but he was an aged man, and died from the effects of it about a week after.

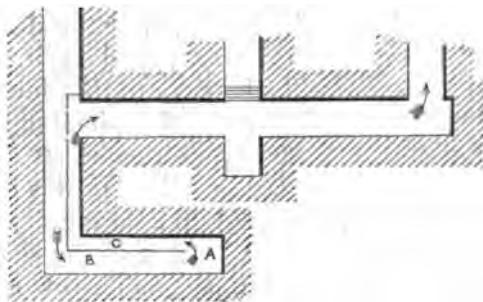
Apparently the gas had been forced out upon the deceased's lamp ; it may have been by a fall of roof beyond the possible range of the fireman's inspection, but the ventilation at that particular place was weak and barely sufficient to cope with any unusual discharge of gas.

This points to the necessity for the strict use of safety lamps while taking out pillars, if gas is suspected to exist.

Accident No. 27, Schedule No. 1, was occasioned by an explosion of firedamp.

In this case the deceased acted as fireman, and was otherwise engaged assisting in the management of the pit. It appears that one of the working places, A, fig. 3, near to the extreme of one of the sections of work, had been abandoned for some time.

FIG. 3.



The brattice by which the air was guided into it was not quite up to the face, consequently the air did not pass farther than the end of the brattice, or about 30 feet from the face of the coal. Between the end of the brattice and the coal a small quantity of gas had accumulated. I understand that on the day of the accident the deceased and an assistant had gone into the place A for the purpose of extending the brattice, to clear out the gas, and getting it put into working order. They had extended the brattice 12 feet, or to within 18 feet of the coal face ; they had used safety lamps to work with, but kept their open lights back, as at B, about 38 feet from the face. It is understood that at the

time of the accident the assistant had gone from the face to where the open lights were placed with the safety lamp for the purpose of trimming it, and during his absence the deceased had commenced to "waff" or displace the gas beyond the brattice, when either by passing back the "intake" to B, or along the return towards C, and finding an opening through the imperfect brattice, it ignited at the open lights at B. There was a slight explosion, by which they were both burned, and the deceased shortly after died from the effects of the injuries.

This description of accident *should never* happen. Under the circumstances it was absurd to allow open lights to be near to the gas, although the quantity was small, while in the act of displacing it ; and it is difficult to conceive how a steady careful man, such as the deceased is reported to have been, should have acted so inconsiderately.

Accident No. 36, Schedule No. 1, was occasioned by the deceased falling into the shaft.

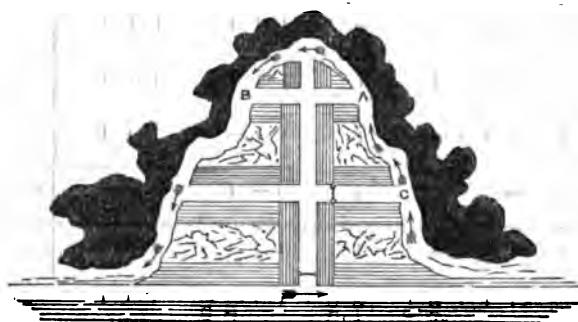
The deceased was a young man and assistant pit-headman, and at the time of the accident he was engaged emptying a water chest, and returning with it to be placed upon the cage, when he fell into the shaft and was fatally injured.

If self-acting moveable fences, such as are in use at the majority of pits, had been in operation this unfortunate accident *could not* have happened.

Accident No. 37, Schedule No. 1, was occasioned by an explosion of firedamp.

The unfortunate sufferer in this case was a young lad who worked with a collier in the "main" seam. It appears to have been arranged with the oversman that they should change their place of work from the main to the "ell" coal, and they had their choice

FIG. 4.



In this case the fireman had wilfully neglected to examine the colliery before allowing the workmen to enter to their work. He was charged by the Procurators Fiscal, Messrs. Hart and Gemmell, with culpable homicide, also culpable neglect of duty, and tried by the sheriff of Lanark and a jury. He was found guilty of culpable neglect of duty, (the charge of culpable homicide was not proven,) and sentenced to one month's imprisonment or pay a fine of 10*l.*

Accident No. 38, Schedule No. 1, was occasioned by an explosion of firedamp.

The deceased was night fireman, and on the evening of the accident, before allowing the workmen to descend to their work, he in making his examination discovered that the ventilation was defective. He dismissed the workmen on account of the pit not being in a fit state for persons to work in, but after a few hours he again descended with an open light for the purpose of making a farther examination when, as reported, a quantity of fire-damp was ignited at his unprotected light near to the pit bottom. Owing to the situation of the "waste" of this pit, it is difficult to comprehend how an explosion of firedamp could happen at the pit-bottom without being much more destructive than the one in question. And no doubt a flask of gunpowder had been exploded in addition to any other explosion, which of itself might possibly have accounted for the accident.

There was something painful about this occurrence, the poor fellow, on account of a derangement of the "slides" in the shaft, having to lie a considerable time at the bottom of the pit before he could be got up. He lived a few weeks after the accident, but died from the effects of the injuries.

I have, &c.

WILLIAM ALEXANDER,
Inspector of Mines.

The Right Hon. H. A. Bruce, M.P.
Principal Secretary of State, London.

SCHEDULE No. 1.

List of the FATAL COLLIERY ACCIDENTS, and Loss of Life arising therefrom, in the WESTERN DISTRICT of SCOTLAND during the Year ended 31st December 1868.

Date.	No. of Accident.	Name of the Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remark.	No. of Lives lost in Coal Mines.					
									Explosions.	Falls of Coal and Roof.	In Sharts.	Misfortune.	Above ground.	Total.
1869.														
Jan. 14	1	Grange, No. 2 Pit	Kilmarnock	Robert Yeats and Co.	George Crichton	Collier	23	Fall of roof	-	-	-	-	1	1
" 29	2	Coreford	Johnstone	Ladovic Houston	John Steel	Ditto	29	Ditto	-	-	-	-	1	1
Feb. 6	3	Goatfoot	Galston	Boyd, Gilmour and Co.	James McGee	Ditto	18	Ditto	-	-	-	-	1	1
" 4	4	Heather Knowe	Baillieston	Heatherly Knowe Coal Co.	Wm. Penman	Ditto	22	Fall of coal at face	-	-	-	-	1	1
" 25	5	Highland Park	Kilsyth	Brown and Rennie	John Mitchell	Ditto	63	Fall of roof while engaged securing it.	-	-	-	-	1	1
Mar. 9	6	Rosebank, No. 1.	Cambuslang	James Dunlop and Co.	Henry W. Garvin	Brusher	36	Fall of roof while engaged securing it.	-	-	-	-	1	1
" 22	7	Swineridgemuir	Beith	Merry and Cunningham	Andrew Barr	Drawer	12	Fall of coal	-	-	-	-	1	1
April 9	8	Coats	Coatbridge	Thomas Jackson	James Judge	Collier	22	Fall of roof	-	-	-	-	1	1
" 14	9	Govan	Glasgow	W. S. Dixon	Peter Shields	Ditto	22	Fall of coal while undermining it	-	-	-	-	1	1
" 21	10	Galston	Galston	John Horne	Andrew Connal	Roadman	58	Was raised by the cage in the shaft when going off at a mid-working.	-	-	-	-	1	1
" 24	11	Holmes, No. 3 Pit	Ditto	Ditto	Wm. Drummond	Waggoner	60	Was run over by a wagon from a "back-ley" when shifting the switches near to the screen	-	-	-	-	1	1
" 28	12	Westmuir	Glasgow	Robert Gray and Co.	David Greenshields	Collier	19	Fall of roof at face	-	-	-	-	1	1
" 29	13	Strone	Kilsyth	Stone Colliery Company	John McKay	Ditto	25	Ditto	-	-	-	-	1	1
May 6	14	Springside	Kilmarnock	Archd. Kenneth	John Hutchison	Roadman	40	Was caught by the signal wire, and drawn off the cage, when about to repair it (the wire).	-	-	-	-	1	1
" 8	15	Dalzellie	Maybole	James Coupar	Alexander Jones	Collier	45	Fall of coal at face	-	-	-	-	1	1
" 18	16	Broomlands	Irvine	Boutrehill Coal Company	Andrew Stewart	Drawer	15	Fall of roof at face	-	-	-	-	1	1
" 24	17	Bankhead	Galston	Eglinton Iron Company	Andrew Holland	Collier	19	Ditto	-	-	-	-	1	1
													Carried forward	

List of Fatal Colliery Accidents—continued.

Date.	No. of Accidents	Name of the Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	No. of Lives lost in Coal Mines.					
									Explosions.	Blasts of Coal and Rock.	In Shafts.	Miscellaneous.	Above Ground.	Total.
1869.	June 2	18 Breeze	-	Merry and Cunningham	-	Collier	-	Brought forward	-	-	14	2	1	17
"	4	19 Alva	-	James Johnstone	-	Drawer	-	Fall of roof at face	-	-	1	-	1	1
"	8	20 Dalzellowlie	-	James Coupar	-	Engineerman	-	Fall of coal at face	-	-	1	-	1	1
"	18	21 Gilmhillcroft	-	James Watchman	-	James Caddis	-	Fell down the shaft from the surface	-	-	1	-	1	1
"	30	22 Annbank	-	T. J. Gordon	-	Collier	-	Fall of coal at face	-	-	1	-	1	1
July 10	23	Ashyard	-	James Eglesham	-	George Dunlop	-	Fall of roof on a roadway	-	-	1	-	1	1
"	24	Lucknow	-	James Galston	-	William White	-	Fall of coal	-	-	22	-	16	38
"	17	25 Dalharco, No. 2 Pit	-	Stevenson	-	Joseph Kelso	-	Fall of roof	-	-	Ditto	-	16	16
"	19	26 Tunnel Pit	-	Dalmellington	-	Robert Hamilton	-	Fall of coal	-	-	Ditto	-	28	28
"	26	27 Barleth	-	Coatbridge	-	Robert Graham	-	Explosion of fire-damp	-	-	Ditto	-	53	53
Aug. 30	28	Maidenbank	-	Hurlford	-	James Young	-	Ditto	-	-	Fireman	-	50	50
Sept. 3	29	Stevenson	-	Muirirk	-	Andrew Gemmell	-	Fall of coal at face	-	-	Collier	-	25	25
"	15	30 Neilston	-	Stevenson	-	John Duff	-	Was crushed in the shaft while being raised.	-	-	Ditto	-	20	20
Nov. 11	31	31 Eastfield	-	Kilryth	-	Alex. Fisher	-	Fall of roof at face	-	-	Ditto	-	33	33
"	15	32 Todd's Calder	-	Cambuslang	-	James Lindsay	-	Fall of coal at face	-	-	Ditto	-	20	20
"	20	33 Burnbank	-	Coatbridge	-	Peter Gillespie	-	Fall of roof	-	-	Brusher	-	37	37
"	34	Fergusonhill, No. 17	-	Galston	-	Richard Armour	-	Ditto	-	-	Labourer	-	32	32
Dec. 8	35	Kirkwood	-	Kilwinning	-	Achrd. Finnie	-	Ditto	-	-	Drawer	-	14	14
"	36	West Pleasus	-	Coatbridge	-	John Hendrie	-	Struck by a stone which fell from the side of the shaft	-	-	Sinker	-	48	48
"	37	Mount Vernon	-	Bannockburn	-	Thomas Robertson	-	Fell down the shaft from the surface	-	-	Walter Davidson	-	23	23
"	38	Burgh Colliery	-	Baillieston	-	William Cains	-	Explosion of fire-damp	-	-	Collier	-	16	16
"	39	Mount Vernon	-	Irvine	-	John Young	-	Ditto	-	-	Fireman	-	40	40
"	22			Baillieston	-	John Connolly	-	Fall of roof at face	-	-	Collier	-	48	48
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SCHEDULE No. 2.

List of the FATAL ACCIDENTS in IRONSTONE MINES, and LOSS OF LIFE arising therefrom, in the WESTERN DISTRICT of SCOTLAND during the Year ended
31st December 1869.

Date.	No. of Accidents.	Name of the Mine.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	No. of Lives lost in Ironstone Mines.				
									Explorations	Rails or Iron-stone and Rock.	Miscellaneous	Above ground.	Total.
1869. May 31	1	Lochside, No. 3 Pit.	Kilbirnie	-	Merry and Cunningham -	Chas. Mulharen -	Labourer -	55	Fell down the shaft by the cage being raised when he was in the act of getting off it.	-	-	1	1
Aug. 6	2	Barrhill -	Cannock	-	Eglinton Iron Co. -	Andrew Weir -	Miner -	80	Was struck by a kettle which got disengaged while being raised, and fell upon him.	-	-	1	1
" 31	3	Cadder -	Bishop Briggs	-	Caron Iron Co. -	John Allen -	Pit-headman -	35	Was struck by the winding rope in its descent down the shaft, after breaking.	-	-	1	1
Oct. 8	4	Peep o'Day -	Airdrie	-	Monkland Iron and Steel Co.	Robert Watson -	Sinker -	35	Got entangled with the crank of the pumping engine.	-	-	1	1
" 12	5	Neilston, No. 1 Mine.	Kilayth	-	W. Baird and Co. -	Alexander Patrick -	Roadsman -	27	Explosion of gunpowder whilst stemming a shot.	-	-	1	1
Nov. 27	6	Cadder -	Bishop Briggs	-	Caron Iron Co. -	John Bankier -	Sinker -	30	Breakage of a chain, which knocked him off a scaffold in its descent.	-	-	1	1
Dec. 21	8	Faskine -	Airdrie	-	Wm. Baird and Co. -	James Smith -	Ditto -	18	Fall of roof at face while engaged securing it.	-	-	1	1
" 28	7	Kennuir -	Do.	-	Wilson's and Co. -	Pat. Develine -	Miner -	26	Fall of roof -	-	-	1	1
										2	3	1	2
													8

Mr. Southern's Report.

REPORT on the INSPECTION OF MINES in the NORTHUMBERLAND, NORTH DURHAM, and CUMBERLAND DISTRICT, from the 31st December 1868 to the 31st December 1869.—By GEORGE WILLIAM SOUTHERN, Esq.

SIR, Newcastle-on-Tyne, February 27, 1870.

As Inspector of Mines for the Northumberland, North Durham, and Cumberland district, I now have the honour to transmit to you my Report for the year ending 31st December 1869.

I regret to have to state that the number of fatal accidents, as reported to me, show an increase of five (5), and of deaths resulting therefrom an increase of eleven (11) over those of the previous year; the increase or decrease, under the different heads of causes, with the total aggregate increase, being shown in the following comparative table:—

		Separate Accidents.		Number killed.		Total, separate Accidents.		Total Deaths.	
From		1868.	1869.	1868.	1869.	1868.	1869.	1868.	1869.
Explosions of fire-damp	- - - -	3	2	3	6	—	—	—	—
<i>Falls of Coal and Stone.</i>									
Falls of coal	- - - -	4	5	4	5	—	—	—	—
Do. of stone	- - - -	24	21	26	23	—	—	—	—
<i>In Shafts.</i>									
Over-winding	- - - -	—	—	—	—	—	—	—	—
Ropes or chains breaking	- - - -	1	1	1	1	—	—	—	—
Whilst ascending or descending	- - - -	7	6	7	6	—	—	—	—
Falling into shaft from top	- - - -	2	4	2	4	—	—	—	—
Falling from part way down	- - - -	3	3	3	3	—	—	—	—
Things falling down shafts	- - - -	3	—	3	—	—	—	—	—
Sundries in shafts	- - - -	—	—	—	—	—	—	—	—
<i>Miscellaneous Underground.</i>									
Explosions of gunpowder	- - - -	—	1	—	1	—	—	—	—
Suffocation by gas	- - - -	1	1	1	1	—	—	—	—
Irruption of water	- - - -	—	—	—	—	—	—	—	—
Falling into water	- - - -	—	—	—	—	—	—	—	—
On incline and engine planes	- - - -	2	1	2	1	—	—	—	—
By									
Trams or tubs underground	- - - -	10	13	10	13	—	—	—	—
Machinery underground	- - - -	—	—	—	—	—	—	—	—
Sundries underground	- - - -	1	2	1	2	—	—	—	—
						61	60	63	66
<i>On Surface.</i>									
Machinery	- - - -	—	1	—	1	—	—	—	—
Boilers bursting	- - - -	—	3	—	5	—	—	—	—
Sundries	- - - -	6	8	6	8	6	12	6	14
Total	- - - -					67	72	69	80

From the foregoing table, it will be seen that there have been two fatal cases of explosion of gas in this district during the past year, and by which six deaths have been caused.

The fatal accidents from falls of coal are one in excess, and from falls of roof a decrease for the year of three accidents and deaths.

The shaft accidents, although high in number, show a decrease as compared with the previous year of two.

From explosion of gunpowder there has been one fatal accident ; from suffocation by gas, one ; and on engine and incline planes, one.

By trams and tubs there have been thirteen fatal accidents and deaths, being an increase of three on the previous year ; and they have in many instances arisen from violation of the "spécial rules" by the sufferers themselves, and in some cases evidently in contradiction to particular instructions given them.

From the bursting of boilers we have had three fatal cases, causing five deaths.

Explosion of Gas.

From this cause there have been, as before stated, two separate accidents, and by which six deaths resulted. The first, No. 7 on the list appended to this Report, having happened at Springwell Colliery on the 29th January, by which five lives were lost, and it occurred in the Low Main seam of this colliery, in which naked lights were used and shots fired. The Low Main seam lays about 10 fathoms above a seam called the Hutton seam, which has been very extensively worked in that district, there being underneath that part where the Low Main is being worked large tracts of goaf, besides a portion left in pillars for the support of the main ways in the Hutton seam ; and at the particular spot where the accident is supposed to have originated the Low Main workings were just on the point of crossing from an underlying narrow tract of whole coal in the Hutton seam to an underlying tract of goaf in that seam, a position of things which would make it much more liable to cracks in the thill or floor in the Low Main seam, through which gas might exude from the Hutton seam.

I proceeded to the colliery as soon as possible after being informed of this accident, and found the workings just as left by the explosion, and at that time there was no indication of the presence of gas found. After inspecting the workings, I made a measurement of the currents of air, and ascertained that there was altogether, going by the Low Main incline plane, nearly 31,000 cubic feet per minute, which was the quantity Mr. Berkley of Marley Hill, the chief viewer of the colliery, stated to be the result of his measurement previously. Of this quantity, 10,000 cubic feet were used in the ventilation of the Low Main workings, and this quantity is again split, and 6,000 cubic feet go into the face of the cross cuts which are shown on the accompanying plan. On reaching the face of the cross cuts, it is again split, and about an equal portion ventilates the north and south ways, the latter being the district in which the explosion took place. The rate at which the current was travelling was 107 feet per minute, a quantity thought to be sufficient, under ordinary circumstances, for ventilating the workings in that seam, there being only seven working places, of the ordinary pillar and stall system, to ventilate on the south side, and the quantity of air measured quite at the face of the workings, and with only a run of 500 yards from the point of splitting to the first working place. But in this case we have extraordinary circumstances, as may be seen from the position at that particular part, as described above, with regard to the seam below. And I would also here notice that the barometer had fallen considerably during the four days previous to the accident.

The whole quantity of air ventilating this colliery, immediately after the accident, I ascertained from measurement of the different currents to be nearly 69,000 cubic feet per minute, there being of this quantity 54,000 cubic feet for ventilating the workings, and the remaining 15,000 cubic feet used for the underground boilers.

From improvements since effected, this quantity is now considerably increased.

At the adjourned inquest, Mr. C. Berkley, chief viewer of Springwell and other collieries, produced plans of the workings, and described the ventilation and the different arrangements of the colliery. He said the air going into the Low Main seam was perfectly fresh, and, from observations of his own on his occasional visits to the mine, thought it perfectly safe, and which had always previously been corroborated by the resident agent's reports.

Mr. John Peel, resident viewer of the colliery, said, that on the day prior to that on which the accident happened, he, in going into the Maudlin seam workings for the purpose of inspecting them, met John Parkin, the under-viewer, coming from going his rounds in the Low Main seam, and on inquiry as to whether all was right, he was informed as to his, Parkins, having seen a crack in the thill in the south district, two pillars up, but on examining it for gas could not detect any. On that assurance he, Mr. Peel, proceeded to inspect the Maudlin seam workings, and arranged for his doing the same in the Low Main on the following day. At the time of the accident, which was at about 2 a.m., this district was in the charge of Thomas Aisbitt, one of the deceased, he having just relieved Schorer, the master-shifter, of the charge of the mine, and who before

leaving said he informed Aisbitt of a little gas having been seen, but only thought it necessary to order the hewer at that place not to fire shots, and to be careful of his candle, but that there was sufficient cause of danger to direct Aisbitt's particular attention to it.

Hugh McRae, the hewer working in the place shortly before the accident, was, according to evidence at least, offered a safety lamp, and refused taking it, and, notwithstanding being ordered not to fire a shot, had afterwards fired one.

From the evidence adduced from two or three other witnesses, it came out that gas had been seen two days before ; and although the rules of the colliery are strict as to their provisions when gas is seen at all, yet there would appear to have been neglect in complying with them.

The verdict of the jury was to the following effect : "That Daniel Cain and others " were killed by an explosion of gas in Wynn's board in Springwell Pit on the 29th " January ; that the brattices should have been kept nearer the face ; that McRae " was acting wrongly in not taking the advice of Schorer as to his candle and shot ; " that Thomas Aisbitt ought to have had the flat laid off when informed there was gas ; " and that it would be better if the rules of the colliery were known more generally " among the workmen."

Safety lamps are now and have been since the accident exclusively used in the workings of this seam.

Accident No. 49 was caused by the explosion of gas in an exploring place at South Pontop Colliery, on the 19th August, by which one man came to his death. From the evidence at the inquest the particulars of the case appeared to be these : Previously to the date of the accident, a small quantity of gas had been met with, coming off at a rise hitch through which the place was driven about 6 yards, and from the position of the place, it being to the rise of the adjoining working, the gas would lodge in it. So soon as the gas was observed, the driving of the place was discontinued, and both the overman and the deputy overman, on being sworn at the inquest, said that props were put up at the entrance to this place (which is the usual way of intimating that no workmen are to go in there) ; and besides this, they both warned the deceased against going, and the deputy had done so as lately as the morning of the day of the accident, seeing that he was working in an adjoining place, and the most likely of any to do so.

Notwithstanding all the precautionary measures that were taken, he, the unfortunate man, did not heed them, and went into the place, when the gas was ignited by his light, and he received such injury that he died ten days afterwards.

Falls of Coal and Stone.

From this cause there have been 26 accidents during the year, occasioning 28 deaths. They have resulted in many instances from slips in the roof, which, before the stone fell, were not at all or not sufficiently discernible to warn the workmen of danger, and as usual in such cases the portion of stone dislocated from the rest of the strata dropping down without giving any previous signs of its liability to do so.

Accident No. 28 occurred at Killingworth Colliery on the 7th May, when Thomas White, an old man, and Peter Carr, a boy, met with their deaths. They were working in a way which is only used for the purpose of having coals conveyed by it to the furnace, and were under the charge of Robert Langlands, the master wasteman, who examined the place, tried the roof, and found it rather heavy, and then, with a simple caution to the workmen to mind it, set them to work, and proceeded to the furnace. Some stone having afterwards fallen at this place, he was called back to examine it, and after doing so gave it as his opinion that no more would fall, and then left, being, as he said at the inquest, so satisfied with the soundness of the roof that he would not have been afraid to work under it himself. However, in a short time, pieces of stone began to fall, and continued doing so for some time before the main fall took place, thereby giving ample warning of the impending danger, and the poor old man White, was advised by two boys, who, from even their short experience in the mine, apprehended what was going to happen, to come away, but the advice was disregarded. Although there was no direct evidence at the inquest to attach blame to the master wasteman, yet I certainly think there had been a great want of care on his part in not taking more precaution for the safety of the men and boys.

In some of the fatal accidents happening both from falls of coal and stone, neglect of care on the part of the sufferers themselves has clearly been proved, and it is much to be regretted that ordinary workmen, and even deputies, who are, as a rule, chosen from among the hewers as being of a more than ordinarily intelligent and experienced class

of men, should be so callous to danger as to run unnecessary risks, and too often simply for the sake of saving a little trouble to themselves.

Suffocation by Gases.

There has been one fatal accident of this class in the district during the year, it being No. 45 in the list.

It occurred at a small sinking shaft at Brown Rig, near Bellingham, on the 13th August. Two brothers, Thomas and William Elliott, had a contract with the owners to sink the shaft, which they were doing by means of a jack roll, and had reached a depth of about 30 feet.

On the morning of the accident, some sinking gear for working with being required, Thomas Elliott went some little distance away to procure it, whilst his brother, William Elliott, proceeded direct to the pit, and on reaching it, instead of waiting for the arrival of his brother Thomas, he "slid" the rope, and there having some stythe accumulated in the shaft during the night, he was overcome by it, and found in the bottom by his brother quite dead.

In Shafts.

Accident No. 5 occurred at Andrew's House colliery. Isaac Lee, an onsetter, was proceeding to bank with a pair of broken limmers, by standing on the top of the cage and holding them, and when a short distance from the bottom was knocked off the cage and was killed. It was supposed that, owing to his not having the limmers in a proper position on the cage, the shafts caught a bunting, and caused the accident. It was recommended that in future limmers required to be sent up the pit should be tied into the cage, and for no one to ride with them.

Accident No. 11 occurred at the Longhirst sinking pit. Thomas Wheatley was engaged with others in the sinking operations, and being prepared to fire a shot, lighted the fuse, and got into a sinking tub besides another man who had previously placed himself in it, and signalled to be drawn to bank, which was attended to, but unfortunately, in getting into the tub, the deceased caused it to "swag," and consequently to come very unsteadily up the shaft, and on reaching a collaring of the pumping set it was caught by it, which threw Wheatley out, and caused his death.

Accident No. 16, occurred at Choppington New Winning. One of their new shafts, which was sunk to the depth of 45 fathoms, had a wooden fence around it, and George Miller, a joiner, and others, were employed in taking it down, and whilst doing so had the top of the pit covered with planks about $4\frac{1}{2}$ in. apart. The deceased had got one of the deals off the fencing, and was bringing it along the planks, when by some means, which could not be clearly proved at the inquest, the plank on which he was walking fell down the pit, and the deceased with it. The putting on of the planks was under the deceased's own supervision. One witness thought the accident had been caused by there being a little ice on the crib on which the planks lay, and by that means causing it to slip over the edge of the shaft.

Accident No. 20 occurred at Cleator Moor Colliery, and was in many respects similar to accident No. 11; but in this case the sinking tub was not even lifted from the bottom before the men got into come away from firing a shot.

Accident No. 47 happened at the Robinhood or Flimby Colliery to John Cooper, a pump man, who, with others, was engaged in making repairs to the sets, when one of them having occasion to go to bank to seek assistance to let the crab rope down, the deceased stood on the clack piece door top of the (upper) forcing set to await his return, but had inadvertently not got himself placed clear of the descending cage, which on its reaching him knocked him off the pumps, and he fell to the bottom of the shaft.

Accident No. 69 took place at West Cramlington Colliery. The sides of the cages have a casing of sheet iron, to protect the men in going up or down the pit from the timber in the shaft; but, on the day previous to that on which the accident happened, one of those iron sheets had got damaged, and was taken off, and had the rules of the colliery had proper attention, men would have been prohibited from riding in this cage from that time until it was repaired, but this was not attended to, and the deceased and another man got into it to come to bank, when he poor fellow, either from not having known of the plate being off, or from having forgotten the circumstance, had undoubtedly depended upon it, for safety, and on leaning or falling back in the cage whilst it was in motion was caught by the buntings, and killed.

No. 71 accident occurred at Wardley sinking pit, and under circumstances precisely similar to those of No. 20 accident.

Miscellaneous Underground.

Of the 15 fatal miscellaneous accidents underground (12), twelve were caused by being crushed by tubs, and were of a purely accidental nature; one was kicked by a pony; one from being caught by a rope on the engine plane whilst he was attempting to get on a set of tubs in motion; and the remaining one by riding out bye on a set of full tubs which was drawn by a horse; the last two cases being contrary to the rules of the collieries.

Miscellaneous on Surface.

The accidents under this head are all cases of an ordinary nature, being mostly crushed by waggons, and purely accidental.

Boilers bursting.

I regret to have to report three fatal cases of boiler explosions, one causing one death, and each of the others two deaths, and in all a large destruction of property.

The first accident, No. 8 in list, occurred at Usworth Colliery, on the 2nd February, when William Benjamin, a waggon driver, was killed. The exploded boiler was one of a range of nine, seven of which were at work at the time, and which were all connected together, and supplied steam to some of the engines at the colliery. At the inquest although the utmost pains was taken by the coroner to sift the matter, and thoroughly practical men from a distance had been called in, by Mr. S. B. Coxon, the chief viewer of this and other collieries, to inspect the boiler and investigate the case, yet I am sorry to say no satisfactory conclusion could be arrived at as to the cause. The boiler in question was insured with the Midland Boiler Assurance Association, of which Mr. Waller, of this town and Darlington, is the local agent, and had been by him or his officials inspected about six weeks before the accident. George King, engineman, and Daniel Consandine, fireman, gave evidence of their having seen, up to within a very short time of the accident, that there was a proper quantity of water in the boiler, that the floats were working freely, and that there was no extra pressure of steam. The boiler was a longitudinally built cylindrical one of six feet in diameter and 30 feet long, was seated with an ordinary flash flue, and was pressed at 35lbs. to the square inch, the plates being of the thickness of $\frac{3}{8}$ in. The engineers and foremen smiths of the adjoining collieries of Washington and Springwell, as well as those before mentioned, gave evidence of their having inspected the plates of the exploded boiler, and did not detect any deficiency in either quality or thickness.

The verdict of the jury was as follows:—

“That the deceased, William Benjamin, died on the 2nd February from injuries caused by the explosion of a boiler at Usworth Colliery; that the boiler was a good one; but there is no evidence of any neglect whatever, and why the boiler exploded there is no evidence to show.”

The second, being No. 56 accident in the list, occurred at Cramlington Colliery, to a boiler used for driving the saw mill engine, and by its explosion caused the death of Edward Shield and James Roberts. The evidence in this case, as in that of Usworth, was given to show that from actual observation by those in charge of the boiler a short time previous to the explosion the float had been tried, and whilst working freely showed a sufficiency of water, that the steam gauge had been particularly noticed, and that it indicated a pressure much below the usual working pressure. The boiler had been laid off for repairs, and the steam just then being raised for work, the safety valves were said to be loaded at 35lbs. to the square inch. The scientific evidence as to the probable cause of the accident in this case produced an expression of opinion from Mr. Waller only, the local agent for the Midland Steam Boiler Assurance Association, and he gave it as his opinion, from what he had seen of the fragments of the exploded boiler shortly after the accident, and from what he had heard at the inquest, that it had been caused by the recent repairs, that in putting in a new long plate the seam in the old work had been shaken, either by drifting, or hammering of the old and new work together, or screwing up the new plate, and in consequence of that shaking the seam had been injured, and hence the explosion.

The boiler explosion, accident No. 72 in the list, happened at Bewicke Main Colliery, on the 29th December last, and caused the death of George Irwin and George Ranson. The evidence at the inquest went to show that Frederick Green, a fireman who had charge of the boilers at the time, had only a few minutes before the explosion

turned the feed off the No. 2 boiler, the one that exploded, in consequence of its being full enough, and had turned it on to No. 3, the adjoining boiler. His attention being at this time directed to a locomotive engine on the branch railway, about 100 yards distant, it is possible that he might have committed a mistake in what he was doing. The boiler was a comparatively new one, having been built at the Birtley Iron Works and set to work at this colliery on the 1st March 1867.

John Swinney, engine wright for this and other collieries belonging to Messrs. Hunt, Perkins, & Co., said the boiler, a longitudinally built one, was 47 feet in length over the egg ends, and 6 feet in diameter, was fitted up with all the appliances of the present day, such as safety valves, floats, &c., and was pressed at 31 lbs. to the square inch.

There were several scientific witnesses examined at this inquest, and the general conclusion arrived at seemed to be that the repairs made to the boiler had been injudiciously executed, and that there had been excessive caulking, and that the way in which the recent repairs had been done had caused a rent at the rivets in the old plates joined to the new ones put in, and which had doubtless been overlooked. The verdict of the jury was :

" That the men George Irwin and George Ranson were killed by the explosion of a boiler at Bewicke Main Colliery on the 29th December last, and that the boiler exploded at the place where the new repairs had been made over the fire, consequent on bad workmanship, and we recommend a more careful inspection of boilers in future."

There have been during the year 57 non-fatal accidents reported, causing injury, more or less, to 61 persons, whose occupations were as follows :—

Hewers	-	-	-	-	26
Putters	-	-	-	-	8
Drivers	-	-	-	-	5
Deputies	-	-	-	-	3
Shifters	-	-	-	-	3
Rolley way man	-	-	-	-	1
Onsetters	-	-	-	-	2
Wastemen	-	-	-	-	2
Stone men	-	-	-	-	2
Trappers	-	-	-	-	2
Sinker	-	-	-	-	1
Horse keeper	-	-	-	-	1
Apparatus man	-	-	-	-	1
Masons	-	-	-	-	2
Joiner	-	-	-	-	1
Wailer	-	-	-	-	1
Total number of person injured					61

And the nature of the accidents have been :

Falls of stone	-	-	-	-	15
Fall of coal	-	-	-	-	9
Explosion of gas	-	-	-	-	7
Explosion of powder	-	-	-	-	3
Run over or crushed by tubs	-	-	-	-	11
Crushed by cage	-	-	-	-	3
Whilst ascending the shaft	-	-	-	-	1
Miscellaneous	-	-	-	-	8
Total non-fatal accidents					57

To the Right Honourable,
H. Austin Bruce, M.P.,
H.M. Principal Secretary of State,
Home Department, Whitehall, London.

I have, &c.
GEO. W. SOUTHERN,
H.M. Inspector of Mines.

List of the FATAL COLLERY ACCIDENTS, and Loss of LIFE arising therefrom, in the NORTHUMBERLAND and NORTH DURHAM and CUMBERLAND DISTRICT, during the Year ending 31st December 1869.

Date.	No. of Accidents.	Name of Colliery.	Where situat.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	No. of Lives lost in Coal Mines.					
									Explosions.	Blows or Coal and Boot.	In Shafter.	Miscellaneous.	Above Ground.	Total.
1869.														
Jan. 12	1	Kibblesworth	-	J. Bowes and Partners	John Liddle	Shifter	-	Fall of stone	-	-	-	-	1	1
" 11	2	Bedlington	-	Bedlington Coal Co.	William Bell	Pony putter	16	Kicked by pony	-	-	-	-	1	1
" 13	3	Backworth	-	Backworth Coal Co.	Matthew Stoker	Deputy	37	Fall of stone	-	-	-	-	1	1
" 14	4	Springwell	-	J. Bowes and Partners	John Ridley	Driver	18	Head caught between tub and roof	-	-	-	-	1	1
" 19	5	Andrew's House	-	Ditto	Isaac Lee	On-setter	22	Falling off top of cage	-	-	-	-	1	1
" 26	6	Lintz	-	Ditto	William Bell	Hewer	30	Fall of stone	-	-	-	-	1	1
" 29	7	Springwell	-	J. Bowes and Partners	George Boggan	Ditto	27	Explosion of gas	Explosion of boiler	Run over by set of tubs on engine plane.	Fall of stone	1	5	
Feb. 2	8	Usworth	-	Geo. Elliot & Co.	John Coulson	Ditto	55					20		
" 3	9	Monkwearmouth	-	Stobart & Co.	David Cain	Deputy	46					31		
" 6	10	Millbank	-	Harris & Co.	Thomas Aisbett	Hewer	-					27		
" 17	11	Longhirst	-	Near Maryport	John Wind	Labourer	-					18		
" 24	12	Flimby	-	Near Morpeth	Wm. Benjamin	Pony putter	-					-		
Mar. 4	13	Montague Main	-	Near Maryport	Thos. Pattison	-	-					-		
" 11	14	Usworth	-	Near Newcastle	James Potts	Hewer	32	Fall of stone	-	-	-	-	1	1
" "	15	Monkwearmouth	-	Near Gateshead	Thomas Wheately	Sinker	22	Falling out of sinking tub	-	-	-	-	1	1
" "	16	Choppington	-	Near Sunderland	George Smith	Pony driver	16	Crushed by tub	-	-	-	-	1	1
" "	17	Ellenborough	-	Near Newcastle	John Athey	Hewer	27	Fall of coal and stone	-	-	-	-	1	1
" "	16	Mickley	-	Near Gateshead	James Rawling	Driver	13	Crushed by tubs	-	-	-	-	1	1
" "	18	Monkwearmouth	-	Near Sunderland	Robt. Thompson	Mason	30	Fell from engine house window	-	-	-	-	1	1
" "	19	Cleator Moor	-	Near Blyth	George Miller	Joiner	28	Falling down sinking pit	-	-	-	-	1	1
" "	20	Walker	-	Near Maryport	Willm. Sides	Hewer	50	Crushed by tub	-	-	-	-	1	1
" 28	21	Cramlington	-	Near Newcastle	Joseph Charlton	Ditto	51	Fall of stone	-	-	-	-	1	1
April 22	22	Marley Hill	-	Near Gateshead	Jon. Nicholson	Plate layer	77	Crushed by waggons	-	-	-	-	1	1
" 23	23	Seghill	-	Near Whithaven	Josiah Travenna	Sinker	50	Falling out of sinking tub	-	-	-	-	1	1
" 30	24	Cowpen	-	Near Newcastle	Wm. Atkinson	Shifter	53	Fall of stone	-	-	-	-	1	1
May 1	25		-	Near Newcastle	Evan Sanders	Hewer	64	Riding on coal tubs on Rolley way	-	-	-	-	1	1
			-	Near Gateshead	Thos. Thompson	Driver	10	Crushed by tubs	-	-	-	-	1	1
			-	Near Newcastle	Geo. Kellet	Under viewer	60	Fell part of way down shaft	-	-	-	-	1	1
			-	Near Blyth	Wm. Tweedy	Hewer	19	Fall of coal	-	-	-	-	1	1
								Carried forward	-	-	-	-	5	5
													8	8
													29	29

List of Fatal Colliery Accidents—continued.

Date.	Name of Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	No. of Lives lost in Coal Mines.				
								Explosions.	Rolls of Coal and Root.	In Shaft.	Miscellaneous.	Above Ground.
1869.												
May 1	26 Choppington	Near Blyth	Bebside Colliery Co.	Ralph Keeney	Hewer	20	Brought forward	-	-	5	8	3
" 1	27 Tanfield Moor	Near Gateshead	Jas. Joicey & Co.	Benjamin Noble	Water leader	19	Fell down staple	-	-	1	1	1
" 7	28 Killingworth	Near Newcastle	J. Bowes and Partners	{ Thos. White	Fall of stone	84	Fell down shaft	-	-	1	1	1
" 7	29 Usworth	Near Gateshead	G. Elliot & Co.	{ Peter Carr	Ditto	13	Ditto	-	-	1	1	1
" 10	30 Cleator Moor	Near Whitehaven	Cleator Moor Co.	Thomas Gardner	Hewer	26	Falling part way down pit (sinking)	-	-	1	1	1
" 11	31 Whithaven	Ditto	Earl Lonsdale	Jas. Wardhaugh	Sinker	54	Riding on tub in underground staple	-	-	1	1	1
" 32	Washington	Near Gateshead	Bell, Kimpster, & Co.	Wm. Tremble	Fireman, underground.	64	when rope broke.	-	-	1	1	1
" 6	33 Cramlington	Near Newcastle	Lamb, Potter, & Co.	Wm. Mattw. Turn-bull.	Fireman at bank.	18	Crushed by shaft water tub falling on him whilst at bank.	-	-	1	1	1
" 10	34 Bedlington	Near Blyth	Bedlington Colliery Co.	Jas. Redstone	Hewer	19	Fall of stone	-	-	1	1	1
April 27	35 Felling	Near Gateshead	G. Elliot & Co.	John Paxton	Fireman	26	Burnt in firehole	-	-	1	1	1
June 7	36 Mickley	Near Newcastle	Cookson & Co.	William Woods	Putter	13	Had an eye knocked out by tub going amain.	-	-	1	1	1
" 30	37 Cramlington	Ditto	Lamb, Potter, & Co.	Joseph Parker	Trapper	13	Caught by rope on engine plane whilst attempting to get on tubs.	-	-	1	1	1
July 5	38 Louisa Pit, Shield Row.	Near Gateshead	David Burn	John McLean	Hewer	57	Fall of stone	-	-	1	1	1
" 5	39 Cramlington	Near Newcastle	Lamb, Potter, & Co.	Sam'l. Waggot	Ditto	39	Ditto	-	-	1	1	1
" 12	40 Springwell	Near Gateshead	John Bowes & Partners	Robert Simm	Ditto	20	Explosion of powder	-	-	1	1	1
" 21	41 Team	Ditto	W. W. Burdon	John Ryan	Waiver	13	Crushed by waggons	-	-	1	1	1
" 23	42 Eden Pit, Consett	Ditto	Consett Iron Co.	Geo. Ditchiburn	Waggon-rider	26	Crushed by water tank	-	-	1	1	1
" 30	43 Springwell	Ditto	John Bowes and Partners	Matthew Watson	Driver	12	Crushed by tubs	-	-	1	1	1
Aug. 18	44 Usworth	Ditto	Geo. Elliot & Co.	John Blackbird	Screener	61	Crushed by waggons	-	-	1	1	1
" 18	45 Brown Rigg	Near Bellingham	Mesrs. Armstrong	William Johnson	Deputy	35	Fall of stone	-	-	1	1	1
" 22	46 Crosby	Near Maryport	Mulcaster & Co.	William Elliott	Sinker	21	Stythe in sinking pit	-	-	1	1	1
" 22	47 Flimby	Ditto	Robert Wilson	John Allan	Deputy	35	Fall of stone	-	-	1	1	1
" 23	48 St. Hilda	Nr. South Shields	John Cooper	John Cooper	Shaft-man	40	Fell down pit from top of low set of pumps.	-	-	1	1	1
" 13	49 So. Pontop	Near Gateshead	William Reay	Shifter	50	Crushed by tubs	-	-	1	1	1	
			John Spark	Hewer	30	Explosion of gas	-	-	1	1	1	
							Carried forward	-	-	7	16	11
										12	8	54

List of Fatal Colliery Accidents—continued.

Date.	No. of Accident.	Name of Colliery.	Where situated.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	No of Lives lost in Coal Mines.						
									Explosions.	In Shafts.	falls of Coal and Roof.	Miscellaneous.	Above Ground.	Total.	
1869. Aug. 28	50	Flimby	—	Near Maryport - Near Sunderland	Robert Wilson Stobart & Co.	Mary Hines William Stokoe	40 Driver	Brought forward Crushed by tubs on surface incline Crushed between tub and balk at flat.	7	16	11	12	8	54	
" 30	51	Wearmouth	—	Near Newcastle	Maud, Taylor, & Co. Lamb, Potter, & Co. Lamb, Burdon, & Co. Bedlington Coal Co.	Jos. Johnson John Whitehouse John Scott Henry Strafford Edwd. Shicld James Roberts John Forster	62 Hewer Horse driver Clerk Mason Cartman Hewer	Fall of stone Crushed by coal tub Breaking of apparatus chain Fall of stone Explosion of boiler Ditto Fall of stone	—	1	—	—	—	1	
" 32	52	Backworth	—	Ditto	Ditto	—	—	—	—	—	—	—	—	—	1
" 33	53	Cramlington	—	Seaton Delaval - West Sleekburn	Ditto	—	—	—	—	—	—	—	—	—	1
Sept. 8 Oct. 1	54 55	Seaton Delaval - West Sleekburn	—	Near Blyth	Near Newcastle	Lamb, Potter, & Co.	—	—	—	—	—	—	—	—	1
" 14	56	Cramlington	—	West Stanley	Near Chester-le- Street.	D. Burn	—	—	—	—	—	—	—	—	1
" 18	57	West Stanley	—	Near Blyth	Besbide Coal Co.	Jas. Harmison	Driver	Crushed by tubs	13	—	—	—	—	—	1
" 19	58	Choppington	—	Near Gateshead	Elliot & Jonassohn	Henry Robinson	Wasteman	Fall of stone	74	—	—	—	—	—	1
" 25	59	Usworth	—	Near Alston	M. Thompson & Sons	John Bright	Hewer	Fall of coal	22	—	—	—	—	—	1
" 30	60	Lambley	—	Near Newcastle	Maude, Taylor, & Co.	William Scott	Ditto	Ditto	58	—	—	—	—	—	1
Nov. 1	61	Backworth	—	Near Gateshead	Anderson & Co. - Maude, Taylor, & Co.	Edward Williamson	Putter	Fell down staple of delivery drift	—	—	—	—	—	—	1
" 3	62	Heworth	—	Near Newcastle	—	Thomas Percy	Stone-man	Was caught by bunting, and thrown out of cage, and fell down shaft.	40	—	—	—	—	—	1
" 24	63	West Cramlington	—	Ditto	Lamb, Potter, & Co.	William Hicks	Hewer	Fall of stone	—	—	—	—	—	—	1
" 27	64	Cramlington	—	Near Burnopfield	Consett Iron Co. - Consett.	Thomas Thompson	Ditto	Ditto (band-stone)	49	—	—	—	—	—	1
" "	65	Derwent	—	Near Whitehaven	Threapthwaite Coal Co. - Near Gateshead	James Cavanagh Roger Brown	Overman Stone-man	Fall down the shaft	57	—	—	—	—	—	1
Dec. 22	67	Threapthwaite	—	Near Gateshead	J. Bowes and Partners	John Armstrong	51	Fall of stone	—	—	—	—	—	—	1
" 26	68	Burnopfield	—	Near Newcastle	R. O. Lamb & Co.	Andrew Lynn	Screeners	Fall off screens	66	—	—	—	—	—	1
" 29	69	West Cramlington	—	Ditto	Maud, Taylor, & Co.	James Moody	Hewer	Fall of stone	58	—	—	—	—	—	1
" "	70	Seaton Delaval - Wardley	—	Ditto	Lamb, Burdon, & Co.	Wm. Quarry	Putter	Ditto	18	—	—	—	—	—	1
" "	71	Bewicke Main	—	Near Gateshead	J. Bowes and Partners	Richard Wilson	Hewer	Fall of coal	21	—	—	—	—	—	1
" "	72	Bewicke Main	—	Ditto	Hunt, Perkins, & Co.	George Irwin	Sinker	Fell out of sinking tub part way down	50	—	—	—	—	—	1
						George Ranson	Engine-man	Explosion of boiler	36	—	—	—	—	—	1
								Ditto	18	—	—	—	—	—	1
								Total	—	—	7	28	16	14	15
															79

Mr. Wardell's Report.

REPORT ON the WORKING of the SEVERAL ACTS of PARLIAMENT for the REGULATION and INSPECTION of MINES for the YORKSHIRE DISTRICT during the year ended 31st December 1869. By FRANK N. WARDELL, Esq.

SIR,

Sandal House, Wakefield, 28th February 1870.

I have the honour to submit for your consideration my Report for the year 1869, as Inspector of Mines for the Yorkshire district. The number of accidents is reduced to 62 from 77 last year, and the deaths resulting therefrom reach a total of 69 as compared with 80 in 1868, exhibiting a reduction of 11. The amount of coal raised was 10,893,500 tons, which shows an increase of 1,188,500 tons over that of the preceding year, and gives a proportion of 1 life lost to 157,877 tons of coal produced (the total produce of coal in the kingdom being 108,003,482 tons, and the proportion of lives lost 1 to 96,777 tons). Although my district represents about one eighth of the total number of coal mines, and contributed last year about one tenth as its share of the general yield, it was only responsible for about one sixteenth of the mining mortality of the country. Unfortunately "locks-out" and "strikes" have been prevalent during the past year to a fearful and most melancholy extent, and it is but fair to conjecture that had this not been the case the "output" would have been even larger and an increase attained in the ratio of coal raised to lives lost corresponding with and proportionate thereto. The subject, although indeed a most serious one, hardly perhaps requires consideration in this Report, but the terrible notoriety attained by certain portions of the district cannot be too deeply deplored. Commercially, the fact of between 2,000 and 3,000 men being "idle" for 12 months speaks plainly as to what must be the inevitable consequences, while the co-existing fact that the pits during this time are liable, from disuse and perhaps a very partial examination, to become somewhat defective in their ventilation (owing to "falls" in "air-courses" and to other causes), is one which is sufficiently important to merit the strictest attention of all concerned, owners, managers, and workmen. There is perhaps more liability to accident in mines which have recommenced working after a period of cessation or even partial cessation, owing to the additional circumstance that many strangers are employed who are unaccustomed to the peculiarities of the mine, the nature of the coal, roof, &c. It is, I think, a matter of some surprise, and points to the improving condition of the trade generally throughout the district, that, notwithstanding the unfortunate drawbacks I have alluded to at some individual collieries, the aggregate production is so far in advance of that of last year; and in speaking of the amount of coal raised, I wish to remark that my Return is based upon the quantities actually given in to me by the coal owners throughout the district. This return is almost universally conceded (only one firm of any magnitude, Messrs Charlesworth, refusing the information), upon the very reasonable understanding that the separate returns shall not be made public, but that each is merely furnished to enable me to obtain the gross amount necessary for the return made to the Secretary of State, accompanying the annual report, the owners' return being, in fact, confidential. As I have no power to enforce the return of this information by the owners, I am of course compelled to estimate the produce in all cases where it is refused or unintentionally neglected, but, as I have said, this is necessary in so few instances that the amount of production stated in my return may be taken as practically correct.

The reason for the apparently excessive diminution in the number of collieries is that in many cases I found pits were entered in the previous lists which were in truth merely additional shafts used for the purpose of pumping water, and not for the actual drawing of coal; to this reason may be added the fact that the smaller collieries which are begun are very often soon obliged to be closed, particularly in the thin-seam district, either from want of capital or because the seam turns out unworkable by reason of "throws" or other causes, or from a stagnation of trade; and I believe that a combination of these reasons at the time my return was made effected the apparently unintelligible numerical reduction. The practical result of the year's work, however, has been an increased "output."

It is with thankfulness I am again able to state that the district has been free from any disaster involving large loss of life, the most serious being at the West Retford pit, Tinsley colliery, where in September last three men were suffocated by noxious vapours given off in consequence of a fire in the coal, though by what means it originated is still unknown. At Darfield main, East Gawber Hall, and at Flockton there were three accidents from falls of roof or coal, involving the loss of two lives in each case. At Snydale two men were killed by suffocation after "firing a shot;" and at Manvers main, a "sinking pit," the lives of two sinkers were sacrificed owing to an attempt being made to drill out a "missed shot," all rules to the contrary being set at defiance. The remaining 56 accidents resulted in the same number of deaths.

SUMMARY of Separate Colliery Accidents in the Yorkshire District during the year ended 31st December 1869.

Explosion of firedamp	-	-	-	-	-	-	1
Falls of coal or roof	-	-	-	-	-	-	38
In shafts	-	-	-	-	-	-	6
Miscellaneous underground	-	-	-	-	-	-	12
On the surface	-	-	-	-	-	-	5
							<hr/>
							62
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SUMMARY of Lives Lost in the above Accidents.

Explosion of firedamp	-	-	-	-	-	-	1
Falls of roof or coal	-	-	-	-	-	-	41
In shafts	-	-	-	-	-	-	7
Miscellaneous underground	-	-	-	-	-	-	15
On the Surface	-	-	-	-	-	-	5
							<hr/>
							69
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DEATHS from Shaft Accidents.

Things falling from part way down	-	-	-	-	-	-	1
Things falling from surface	-	-	-	-	-	-	1
Falling into shaft from part way down	-	-	-	-	-	-	2
Got upon cage top to do something to signal wire, when incautiously pulling it, the cage ascended and crushed him	-	-	-	-	-	-	1
While drilling out a "missed shot" in a "sinking pit" contrary to rule	-	-	-	-	-	-	2
							<hr/>
							7
							<hr/>

MISCELLANEOUS—UNDERGROUND.

Suffocation	-	-	-	-	-	-	2
On inclined planes	-	-	-	-	-	-	3
By trams and tubs	-	-	-	-	-	-	5
Kicked by a pony	-	-	-	-	-	-	1
Caught his hand in a pulley wheel near shaft bottom, and died of lockjaw	-	-	-	-	-	-	1
Coal took fire in the pit by some means unknown; being unable to reach the shaft they were suffocated	-	-	-	-	-	-	3
							<hr/>
							15
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ON THE SURFACE.

Run over and crushed by waggons	-	-	-	-	-	-	3
Crushed by a boiler which he was assisting to lower	-	-	-	-	-	-	1
Fell off screens into a cart when emptying a tub, owing to a cross bar breaking	-	-	-	-	-	-	1
							<hr/>
							5
							<hr/>

MONTHLY STATEMENT of DEATHS caused by ACCIDENTS in the COAL MINES of the YORKSHIRE DISTRICT during the year 1869.

		Explosions.	Falls of roof and coal.	In shafts.	Miscellaneous.	Above ground.	Total.
January	-	-	4	-	2	-	6
February	-	-	1	-	1	-	2
March	-	-	2	-	1	1	4
April	-	-	2	-	-	-	2
May	-	-	1	1	2	1	5
June	-	-	5	1	-	-	6
July	-	-	6	2	-	1	9
August	-	1	3	-	2	-	6
September	-	-	3	-	4	-	7
October	-	-	7	1	2	-	10
November	-	-	4	-	1	1	6
December	-	-	8	2	-	1	6
Total	-	1	41	7	15	5	69

LIST of COLLIERIES where FATAL ACCIDENTS have taken place in the years 1868 and 1869.

Owner's Name.	Name of Colliery.	Deaths.		
		1868.	1869.	Total.
Earl Fitzwilliam -	Simon Wood -	2	1	3
	Park Gate -			
Aldwarke Main Co. -	Aldwarke Main -	1	-	1
T. M. Carter and Co. -	Allerton Bywater -	2	1	3
Farnley Iron Co. -	Osmondthorpe -	3	-	3
	Walsh -			
Newton, Chambers, and Co. -	Thorncliffe -	1	1	2
Cliffe Coal and Fire Clay Co. -	Hollingthorpe -	1	-	1
Lundhill Coal Co. -	Lundhill -	1	-	1
Jeffcock and Dunn -	Carbrook -	1	1	2
	Warren Vale -			
	Rothwell Haigh -			
Messrs. Charlesworth -	Cosens -	6	2	8
	Milnthorpe -			
	Thrybergh Hall -			
	Robin Hood -			
Isaac Wood and Son -	Dean Lane -	1	-	1
Sturges and Co. -	New Gawber Hall -	1	1	2
R., M., and Holmes Co. -	Holmes -	3	1	4
Thrybergh Hall Co. -	Thrybergh Hall -	1	-	1
B. Huntsman -	Soaphouse -	1	-	1
	Upper George -			
	Mill Shaw -			
Hird, Dawson, and Hardy -	Hagg -	2	2	4
	Mill -			
	Strangeways -			
D. Wroe and Co. -	Heckmondwike -	2	-	2
	Waterloo -			
Sharlston Coal Co. -	Sharlston -	1	1	2
Fence Coal Co. -	Fence -	1	-	1
Greenhough and Co. -	Adwalton -	1	-	1
Charles Winn -	Nostell -	1	-	1
J. and J. Haigh -	Morley -	1	-	1
Pope and Pearson -	Silkstone -	1	2	3
Monk Bretton Co. -	Monk Bretton -	1	-	1
B. Huntsman -	Tinsley -	2	4	6
	Nunnery -			
Wombwell Main Co. -	Wombwell Main -	2	2	4
Mitchell and Co. -	Swaithe Main -	1	1	2
W. Ingham and Sons -	Wortley -	1	-	1
	Victoria -			
Hudson and Co. -	New Haigh Moor -	2	2	4
	Silkstone -			
Silkstone Fall Co. -	Silkstone Fall -	1	1	2
Joshua Bower and Sons -	Preston -	3	-	3
	West Allerton -			

List of Collieries where Fatal Accidents have taken place—*continued.*

Owner's Name.	Name of Colliery.	Deaths.		
		1868.	1869.	Total.
Manston Coal Co.	West Yorkshire	2	2	4
	Manston			
Kiveton Park Co.	Kiveton Park	1	1	2
Rhedes and Harvey	Car House	2	1	3
Leather and Littlewood	Ellis Laith	1	—	1
Skinner and Holford	Waleswood	1	—	1
Bowling Iron Co.	Dennison Land	—	—	—
	Clifton	2	1	3
	Tong	—	—	—
H. Briggs, Son, and Co.	Methley Junction	1	—	1
A. Harding and Co.	Beeston Manor	1	1	2
J. Jackson	Great Gomersal	1	—	1
J. Leather	Waterloo Main	1	1	2
W. Ackroyd and Bros.	Morley Main	1	—	1
G. and J. Haigh	Ravensthorpe	2	—	2
	Alverthorpe	—	—	—
Wharncliffe Silkstone Co.	Wharncliffe Silkstone	1	1	2
West Yorkshire Iron and Coal Co.	West Ardsley	1	1	2
E. Sutcliffe and Co.	Victoria	1	—	1
J. Baistow	Norwood Green	1	—	1
Blacker Main Co.	Blacker Main	2	1	3
Burnley's Executors	St. John's	1	—	1
Samuel Fox and Co.	Stocksbridge	1	—	1
Woolley Coal Co.	Woolley	1	3	4
Inspectors of Hoyland and Elsecar	Hoyland and Elsecar	1	—	1
Howley Park Co.	Howley Park	1	—	1
Locke and Co.	Kippax	—	—	—
Staveley Coal and Iron Co.	North Staveley	1	—	1
Garforth Coal Co.	Garforth	1	1	2
Asquith, Bros.	Howden Clough	1	—	1
W. Day	Old Mill	1	2	3
J. Rhodes	Woodthorpe	—	1	1
Pitsmoor Coal Co.	Brightside	—	2	2
G. A. Howorth	Silkstone Main	—	1	1
Norwegian and Titanic Co.	Neville Hill	—	1	1
Firth, Barber, and Co.	Oaks	—	2	2
R. C. Clarke	Old Silkstone	—	1	1
Thorp's Executors	North Gawber	—	1	1
Darfield Main Coal Co.	Darfield Main	—	3	3
Wheldale Coal Co.	Wheldale	—	1	1
R. Craik and Co.	East Gawber Hall	—	2	2
Seth Senior and Sons	Box Ings	—	1	1
Lodge, Webster, and Scott	Healey	—	1	1
G. Watkinson and Sons	Darton	—	1	1
Townend Bros.	Denholme	—	1	1
Rhodes and Dalby	Snydale	—	2	2
Denaby Main Co.	Denaby Main	—	3	3
John Holmes	Churwell	—	1	1
Manvers Main Co.	Manvers Main	—	2	2
Stansfield and Co.	Flockton	—	2	2
Haynes and Co.	Hall Royd	—	1	1
Total Deaths		80	69	149

Nature of Accident.	Number of Deaths.		
	1867.	1868.	1869.
Explosion of firedamp	1	6	1
Falls of coal and roof	41	36	41
In shafts	18	11	7
Miscellaneous	17	13	15
Above ground	13	14	5
Totals of lives lost	90	80	69
Totals of accidents	84	77	62

The above table, showing the number of accidents and deaths in 1869 together with the two preceding years, so far indicates a satisfactory result, inasmuch as the number is each year smaller and represents a proportionate decrease in the mortality. If it be further added that the amount of coal raised in this district during these three years was 9,850,000, 9,705,000, and 10,893,500 tons respectively, it will be seen that the deaths in the year 1867 were 1 for 109,444 tons raised; in the year 1868 1 for 121,312 tons raised; in the year 1869 1 for 157,877 tons raised; and the gratifying result is obtained that, while in 1867 the total number of deaths was in the ratio of 9·1 to each million of tons, it decreased in 1868 to 8·2 and in 1869 still further to 6·3. During the year 1869 the number of persons killed in the mines of this country was 1,116, and the quantity of coal produced was 108,003,482 tons, being in the ratio of 10·3 to each million of tons. Thus it will be observed that the loss of life in the Yorkshire collieries bears very favourable comparison with the aggregate mortality in the mines of Great Britain.

I would beg leave again to draw attention to the fact that the introduction of a better class of "bottom stewards," or managers, more especially in the smaller collieries, would tend to produce most beneficial results. In very many cases these men are totally deficient in education, some I have met with cannot even read or write, and yet they are holding positions pregnant with responsibility, and have the charge and care of human lives. It is impossible that such men should understand the commonest principles of ventilation and management, and a strict observance of the general and special rules cannot be expected of them. In too many instances they are common labourers as well as managers, and, objectionable as this seeming anomaly is, it is nevertheless true that they actually get coal, or are employed as "bye-workmen," while at the same time they are supposed to be examining and inspecting the entire mine, and guarding as far as possible against all dangers threatening the lives of the workmen. It would be out of the question to suppose them competent to understand any plans or the use of any scientific instruments. I am the more anxious to protest against this system as dangerous since in more than one instance in my own district it has been the cause of unfortunate consequences.

In alluding to the mortality occasioned by explosions of firedamp, I cannot too thankfully draw your attention to the fact that the single accident from such a cause producing fatal consequences has only resulted in the loss of one life. This minimum amount of fatality (the same having only been recorded twice previously since the commencement of the Inspection Act) is indeed a subject for the greatest rejoicing when the large extent of the district and the amount of production are considered; and more than all when it is borne in mind that the list of mines includes some of the most fiery in the kingdom, and that instances are too common where the deadly carburetted hydrogen has found vent in sudden and totally unexpected outbursts, and filled a mine (up to that moment, perhaps, thoroughly ventilated and worked under the strictest supervision and the most careful management) with the rush of a whirlwind. If the four years in which the fearful and devastating explosions took place at "Warren Vale," "Lundhill," "Edmund's Main," and the "Oaks" be taken from the list, and they were truly years bearing an extraordinary and lamentable record, it will be found that the average yearly mortality from this source during the 14 remaining years is 9.8. The single instance of death from explosion of gas which I have to record was one which ought not to have occurred, the unfortunate steward of the mine being himself the victim of his own carelessness. I will, however, detail the case more at length when I enter into some statements of such accidents as I think too important to be passed over without comment. The first essential requisite to prevent, or at least reduce, the accidents from this source is undoubtedly an abundance of fresh air circulating through the mine. I use the word "abundance" advisedly, for it is not desirable that the minimum amount of air consistent with expected safety should be provided, but provision should be made for contingencies, in the shape, for example, of sudden eruptions of gas. The right and proper distribution of the air throughout the workings is also of quite as great importance. A most deleterious system, and one which cannot be too strongly condemned, is that where, instead of being split and divided, the same current of air is allowed to work around several districts one after another, its vitiations and impurities gathering and increasing as each district is passed; the result being that many of the workmen are inhaling an atmosphere impregnated with baneful gases. One of the most important special rules affecting this class of accident is that which requires that "every working place and travelling road shall be examined with a safety lamp daily before the miners and boys descend." There ought to be no mistake or misunderstanding about this, and its efficacy should be felt by both managers and men, each should assist the other to enforce it rigidly; the managers by taking care that the places are examined,

and the men by patiently waiting for the signal that all is right before they descend. There should be no hurry or slovenly haste on either side, for indeed lamentable results too often follow such a course of proceeding. I believe the system of exchanging regular daily written reports between officials to be excellent, and it is one I universally advocate. A manager has his attention drawn to a written report by his deputy, for instance, that gas was observed in such a place; steps can then be immediately taken for its removal. The day deputy reports to the night deputy who succeeds him that all is right, or if not, what and where is the evil. The night deputy in turn makes his report to the day deputy, and so on, both handing their reports to the manager. By "reports" I do not mean anything lengthy or elaborate, or any attempt at detail; a few words, not taking five minutes to write, are sufficient. These reports are then filed, and a manager has thus a most useful store of information to refer to.

The deaths from "falls of coal or roof" form a most serious item in the list, the number last year being 41, or very nearly 60 per cent. of the total amount of mortality in the district. The only hope of any diminution in the frequency of these casualties rests upon the rules being carefully and systematically carried out under a rigid management. In some parts of the district men set their own timber; in others appointed persons set it for them. In all cases it is better to have an over supply than that there should be any deficiency. Where a prop too many will at any rate effect no harm, one too few may cause a man's death. It is also strongly to be urged that experienced deputies should visit the working places as often during the "shift" as possible. The men, on their part, ought to be ready always to obey the instructions of the deputies, and if they are told to set a prop to do so at once, and not wait till they get this corf filled, or that piece of coal down, or until they have had their dinner. Such delays have, I fear, done much to make up so terrible a total of deaths as 41. The rule which renders it imperative that "spraggs" must be set every two yards in "boring" or "holing" the coal is all important, and should be very strictly adhered to. A large proportion of accidents from "falls" are not to be prevented; a "slip" in the roof or a "parting" in the coal, quite imperceptible, will cause a fall to take place suddenly, without the slightest warning. The very stone which falls from the roof, were it tested with a hammer the moment before, would probably sound perfectly solid, but the sides are like glass, and it slips from its place. Such accidents cannot always be foreseen.

The casualties "in and about shafts" amount to seven during the past year, a reduction of four from the total of the year before. It should be borne in mind that wherever any safety apparatus is adopted in connexion with the ascent or descent of the cage, it is not intended that it should supersede adequate machinery, good ropes, and proper supervision.

Four out of the seven deaths were caused by carelessness or wilful disobedience of the special rules.

Under the head of "inclined planes," amongst the "miscellaneous accidents under-ground," the total number killed is three, and by being crushed or run over "by trams or tubs" five, or a total of eight. This is a decrease of two from the previous year, but it is still very much in excess of what it ought to be. In all cases where underground inclined planes or engine planes exist, an avoidance of the same as travelling roads is much to be desired, and, wherever practicable, a separate and distinct way for travelling upon should be constructed; this has been done, I am happy to say, in very many instances, and indeed where such a course is, from cogent reasons, impossible, the general and special rules, if strictly adhered to, provide against such accidents of this class as are to be humanly apprehended, by clauses specifying clearly that the communication by signals must be definite and distinct, and that proper and sufficient "places of refuge" must be made and maintained at regular intervals along such planes. In many instances where boys are killed by "trams or tubs," a thoughtless recklessness in jumping off and on to a train of corves has been the unfortunate cause, and even where men of mature years have lost their lives on engine or other planes, they have in too many cases fallen victims to their own foolhardiness and imprudence.

Under the head of "accidents on the surface," I have to record a considerable diminution, there having been only five in 1869, as compared with 14 in the previous year. These five deaths were for the most part the result of being run over or crushed by waggons, and do not require any particular observations by me here.

I will now proceed to enter into some details with regard to such of the occurrences in the list as require special comment.

Accident No. 6.

This occurred at the Brightside Colliery, near Sheffield, the property of the Pitsmoor Coal Company. The deceased was a "hanger-on" at the bottom of a "jenny-bank" in the mine, and was a young man nearly 18 years old. The incline was about 30 yards long, and the gradient about 1 in 2½. Only one full corf at a time was let down, and by means of a chain. The accident was caused by the breaking of one of the links of this chain, the full corf then running "amain," and crushing the poor fellow at the bottom of the incline. There was a proper signalling apparatus, and he had given the signal to the man at the top of the "jenny" that he was ready, and then went into the "level" out of the way. It was conjectured that he had not gone sufficiently far, and that when the chain broke, and the corf ran to the bottom, the latter had rebounded upon him and caused the injuries which resulted in his death.

Accident No. 15.

A very simple and apparently trifling injury in this instance cost a poor boy, 12 years old, his life, at the Oaks Pit, near Barnsley. By some means he got his hand slightly crushed in a pulley wheel in one of the engine planes at the bottom of the pit. Little was thought of it at the time, but in a fortnight lockjaw supervened, terminating fatally.

Accident No. 18.

This accident also occurred at the Oaks Pit, in one of the "sinking pits" which are being sunk at Ardsley. The sinker who lost his life on this occasion was in the shaft bottom when something struck him on the head; what it was or where it fell from could not be ascertained, as nothing was discovered in the bottom. A "shot" had been recently fired, and it is possible that a piece of stone may have lodged on one of the flanches of the pumps, and afterwards fallen down, although I ascertained that before recommencing work after the "shot" the shaft sides and pumps had been examined as required by rule.

Accident No. 22.

Two men were killed at Darfield Main Colliery, near Barnsley, on the 15th June, by a fall of coal and roof. They went to work at 2 o'clock in the afternoon of the 14th, and their "shift" would terminate about 10; but as they were anxious to do some extra work, they told the deputy that they should remain until two a.m. On visiting the "bord," where they worked, about 7.30 in the evening, the deputy found the place, in his judgment, safe. "Chocks" were at that time within three feet of the "face," and "punchons" were also properly set. Nothing more was seen of the men until their bodies were found, about 3 a.m. by the day deputy, under a fall of coal and roof. There was an abundance of timber close by, ready for use, and both men bore a good character for steadiness and carefulness; still I am inclined to think, from my examination of the place, that they had gone on working from the time of the deputy's visit till their death without setting more timber; no trace of any beyond what had been up when the deputy was there was found, and subsequent to his visit they had filled nine corves of coal. I found the coal had parted at a "letter off," the sides were slippery and smooth as glass; and there is no doubt the fall took place without a moment's warning.

Accident No. 24.

The dangerous consequences of the absence of due care and caution, so especially requisite in shafts, were here made fatally evident. The scene of the disaster was a "sinking pit" at Wheldale Colliery, near Castleford. The shaft had reached a depth of 148 yards, and on the morning in question a "shot" was fired in the "bottom"; after which two of the sinkers descended, and properly examined the shaft as they did so; they found everything perfectly safe, and the remaining two sinkers then proceeded to join them at the bottom. The deceased, John Bailey, was in a playful humour, and got into the "trunk" in a very unsteady manner. He continued his jokes as they descended, and caused the "trunk" to vibrate to an alarming extent. About 134 yards from the surface there was a scaffold which had been used during the walling of the shaft, but, not being then required was suspended by two chains against the side of the shaft, leaving ample room for the descent or ascent of men and materials. Bailey's unsteadiness caused the "trunk" to catch at the head of this scaffold, and both men were precipitated to the bottom, a distance of about 14 yards. The fall proved fatal to Bailey, and injured his companion

severely. The survivor stated that deceased alarmed him much by moving about in the "trunk" as they descended. Fortunately they did not fall on either of the men who were then at the bottom, or the consequences would have been even more serious. A special rule, directing the engine-man to steady the rope before the tub leaves the top of the shaft, had been, I ascertained, carefully observed.

Accident No. 27.

In this case a fall of roof and coal took place, by which two colliers lost their lives. The accident occurred at East Gawber Hall Colliery, near Barnsley, the property of Messrs. R. Craik and Company. The two men were working in a "bank" in the Barnsley seam, some 20 yards in width. The deputy reported that at the time of his visit in the morning the place was well timbered. The deceased came to work at 2 p.m., and the man whom they succeeded said that at that time there was a "pack" built to about four or five feet from the "face," two rows of "props" and a "chock" between the "pack" and the "pillar;" one row of wood being only three feet from the "face." This man also said that he told the deceased, when they removed the "chock" they were first to set two props in front of it. There were four spare props ready for use at that time. I think that the poor fellows had been removing the "chock" and had not first fixed other props. Both were young men, the elder only 25 years of age; he was quite an inexperienced man, and, in my opinion, certainly ought not to have been in "posting" work, where greater care and some knowledge and experience are requisite. I received complaints after the accident that the men were kept short of wood, and that there was some gas pent up in certain parts of the mine which ought to be removed. I investigated these statements fully, and, so far as I could ascertain from the evidence of others and my own observation, I could not discover any substantial grounds for the first. The "bank" where the accident occurred had been well timbered, and there was a further supply close at hand. The men throughout the pit generally seemed to have no scarcity, and I could not find that any of them had complained of a deficiency. With regard to the second cause of complaint, I found that it had some foundation. Some "bords" in the "new slant" had contained gas on one or two occasions lately, and although the steward, Sidebottom, had his attention drawn to this, he took no steps to remove it. I found the presence of gas sufficiently accounted for by the fact that the "brattice" was not kept properly up and made good, in order that the current of air might pass by the "face." There was very little gas, and all that was required to remove it was attention to the "brattice." I found also that one of the deputies had been in the habit of neglecting to visit these (and probably other) places sometimes for two or three days together. I therefore felt it my duty to give notice to the owners that the ventilation had been defective and insufficient to meet the requirements of the first general rule; that a deputy was in the habit of neglecting to examine certain places for two or three consecutive days; that the "brattice" was not kept up according to special rule; and that it is not advisable to send men to "posting" who are unaccustomed to that particular kind of work. The want of system and regulation thus exemplified, reflected discredit upon the management, and proved an absence of care and caution in the responsible manager, which was highly blameable. I received a reply through the manager, Mr. Pease, to the effect that the deputy had been suspended; that the face of working places should be supplied with a current of air; that the brattice should be kept properly up in future, and that men employed in "posting" should be, as far as could be judged, careful, experienced men.

A copy of this correspondence I had the honour to transmit to you.

Accident No. 35.

This, the only fatal case of explosion of fire damp during the year, occurred at the Holling Pit, Dentolme Colliery, near Bingley, the property of Messrs. Townend, Brothers. The man who lost his life was the underground steward. He went down the pit on the morning of the misfortune, and in the course of his examination of the working places before the men came down, he visited a place known as the "water head," about 200 yards from the bottom of the shaft. There was a door fixed for the purposes of ventilation, about 20 yards from the "face," and on coming to this door, Tidswell (the deceased) went through it with a naked light as well as his safety-lamp, the consequence of which was, there being some gas in the place, an explosion occurred, which burnt him so severely as to cause his death a few days afterwards. Several stoppings in the vicinity were blown out and the door above named blown down. It seems hardly

credible that a man holding the responsible position of the deceased should himself set the example in breaking the special rules, and be guilty of such a piece of gross carelessness as I have stated. Yet so it was. How difficult it is to make the workmen understand the utility of the rules, and the paramount importance of observing them, when those who are placed over them seem themselves to set all rules at defiance ! A man will say, as in this instance, "I never expected gas there," and learns when too late that the rules were framed to prevent his depending entirely upon his own opinion, and to meet danger as far as possible by precautionary measures. The poor fellow fell a victim to his own negligence, thus furnishing a very stern and melancholy example. I did not find the general ventilation in a very efficient state, and several of the special rules were being daily violated. I suggested some improvements and alterations to the owners, and the jury at the inquest heartily endorsed them, and appended them to their verdict. I was very glad to find that an additional shaft was being sunk for the purposes of ventilation, and I shall be pleased to hear that it is completed, as it is very greatly needed. Upon visiting the colliery again in the course of two or three months I was surprised to find that my suggestions had not been acted upon, and that there was then gas actually in the same place where the explosion occurred, which had been there ever since. The "stoppings" which had been deranged then were now in the same state, and I found further that the manager, S. Jackson, was totally uneducated, and could not even explain to me on the plans how the mines over which he had the *charge* were ventilated. I wrote to the owners seriously remonstrating with them, and stating that I did not think their manager a fit and proper person to be entrusted with so great a responsibility. They promised attention to the matters I complained of, and are now carrying out my suggestions.

Accident No. 36.

In this instance too, I am sorry to say, proper care and an observance of the rules might have prevented the accident. The two poor men who were killed acted most imprudently and against orders. The deputy was guilty of flagrant violation of rules, and the manager was much to blame for a general state of exceedingly lax discipline throughout the mine. The accident took place at Snydale Colliery, near Pontefract, the property of John Rhodes, Esq. It appeared that a narrow bord was being driven on the N. E. of the shaft, for the purpose of "holing" into a place where water was standing, in order to liberate it. When I examined the "bord," the "brattice," which should have been within 10 feet of the "face" according to rule, was 36 feet back. As the work advanced very slowly, the "brattice" must have been beyond the prescribed limits for some days previous to the fatal occurrence, and seen both by Thresh, the manager, and Hargreaves, the deputy, it being the duty of the latter to keep it up. Thresh had several times drawn the attention of Hargreaves to this, and the fact of his having to do so, I think, reflects poor credit on his own discipline ; the last time he did so was at 3 o'clock on the afternoon of the accident, Hargreaves promising to attend to it. The men were then within 13 feet of "holing," and they had a bore-hole about 9 or 10 feet in, for the purpose of tapping the water. Thresh at this same time ordered them not to use any gunpowder, the deputy being present and hearing the order. In the course of the afternoon, however, they sent their hurrier to the shaft for powder, and he, not being able to get it, applied to Hargreaves, who, strange to say, at once supplied him with it. He ought not only to have directly refused, but the mere fact of the hurrier's application should have aroused his suspicion, and he should have at once proceeded to the men. The rest is soon told. The men put a very large charge of powder in the hole, fired the fuse, and retired. Upon going in to the face after an interval of a quarter of an hour they were immediately suffocated.

The "bord" was 123 yards long, and there was therefore the very greatest necessity for the "brattice" being kept well up to ensure a current of air passing by the "face." It is possible that had such been the case the current of air would have carried with it the smoke and enabled the unfortunate men to get out again. According to your instructions, I instituted proceedings against Hargreaves for breach of rules. Very much to the surprise of my solicitor and myself the magistrates dismissed the case. I believe this to have been productive of much harm in the district, as tending to lower the importance of the special rules and to nullify the necessity of a strict observance of the same. I protested most strongly against the dangerous and objectionable plan of keeping gunpowder stored in the pit, and requested it might in future be kept above ground.

Accident No. 40.

This accident occurred at the West Retford Pit, Tinsley Colliery, near Rotherham, belonging to Benjamin Huntsman, Esq. By some means or other, the seam took fire, and three men, who were unable to get out of the pit, were suffocated. The origin of the fire is still and probably will ever be unknown, though there are several conjectures about it, one of which, and not an improbable one, is that some hurriers, proverbially careless as they are with lights, had left their oil lamps, which they carried, in close proximity to some pack walls, which are there built of wooden chocks. I repaired to the pit, word being brought to me of the accident just as I was about to descend another pit, fortunately in the neighbourhood, and descended with the manager, Mr. Chambers. Every possible means was tried to get round the fire or to get through it, by filling the burning material into tubs and sending it up the shaft; and I can bear witness to the almost superhuman exertions that were used, but all of no avail; the fire spread with alarming rapidity, and in anxiety lest an explosion of gas should occur, or the workers should be maimed, perhaps killed, by the huge masses of roof which were falling every moment, owing to the intense heat, I advised that the shafts should be hermetically sealed, as the only remaining expedient for saving the colliery, there not being a sufficient supply of water accessible to drown the pit. Mr. Chambers fully concurred in this view, and Mr. Huntsman, who was present the whole time and ready to do anything which might be deemed most advisable, immediately agreed. All hope of saving the lives of the two poor men immured (the body of the third having been recovered) had been abandoned long before. It was an impossibility that they could be alive; indeed, they must then have been dead for hours. The work of sealing the shafts was then commenced and finished as expeditiously as possible. The re-opening is at this present time going forward. I cannot speak in too high terms of the noble way in which both masters and men behaved on this most trying occasion; the men strenuously used every exertion so long as the slightest chance remained of rescuing the bodies of their comrades, and when that was despaired of they still worked night and day till the shafts were securely sealed. Mr. Huntsman, who was present during the whole time, encouraged the workers, even working with them, although few, perhaps, gauged the heavy heart with which he did so while reflecting upon the unfortunate calamity, involving the death of three of his workmen and the enormous pecuniary loss he would sustain before the pit could be worked again. Mr. Chambers, on his part, used his best endeavours, first to obtain the bodies, and then to save the colliery, and, in my opinion, adopted the only available and safe course under the circumstances.

Accident No. 60.

In December two sinkers were killed in a "sinking pit" at Manvers Main Colliery, near Rotherham, under the following circumstances: Charles Taylor, the master sinker, and the other sinkers lighted the fuze of a "shot" in the shaft bottom, and then, of course, were drawn to the surface. The shot missed fire, and in about three-quarters of an hour, four of them, including Taylor, descended again. They found that the fuze had "run" but had not exploded the shot. They then commenced to "drill out" the shot, and while doing so it exploded, and so seriously injured two of them that they died shortly afterwards. The shot-hole was about 3 ft. 3 in. deep, and contained a charge of 2 lbs. of powder. Here then was a fearful calamity consequent upon a gross and wilful violation of the special rules, one of which says that "a missed shot must not be drilled out," and another, that "if a shot misses fire, the sinkers must not return to it for six hours." The master sinker, who had charge of the men, and whose duty it was to see that the rules were strictly carried out, not only allowed the men deliberately to break them, but himself accompanied them down the shaft and superintended the "drilling out" of the shot. These facts were totally at variance with the man's character for twenty years as a sinker, and he was declared by the owners to be noted for his steadiness and careful attention to the rules, yet with strange inconsistency he permitted a breach of rules, well knowing, as a practical and experienced man, the very great and dangerous risk attending it. The poor fellows who were killed of course contributed by their own conduct to their untimely end, but the onus of responsibility rested with Taylor, who was committed at the coroner's inquest for manslaughter.

Accident No. 61.

In this case a deputy and a "hanger-on," both steady careful men, were killed by the falling in of part of the "porch" at the Brothers Pit, Flockton, belonging to

Milnes Stansfeld, Esq. The underground steward was also very seriously injured by the same fall. The coal had in former times been worked in close proximity to the shaft. The timbering about the "porch" had been renewed about a month previous to the accident, and the steward stated that at that time there was no pressure at all on the wood, either from the roof or laterally. On the day of the misfortune Westwood, the steward, when leaving the pit, observed one of the couplings driven sideways out of its place; he, the deputy, and the "hanger-on" who were present, immediately began to repair this, and were in the act of setting up a second prop, having already fixed one, when a large quantity of the roof came down suddenly, burying all three, and killing two of them instantly. I recommended the manager, Mr. Wood, if it was intended still to carry on the working of the pit, to have the "porch" properly arched with brick; this he promised to do, and immediate steps were taken to put the plan into execution.

The fatalities in connexion with the working of ironstone last year amount to two. In both cases death resulted from falls of roof, nor is there in either any remarkable circumstance requiring particular observation. During the year I received several complaints, both verbal and written, from various persons respecting insufficient ventilation, negligent management, non-observance of general or special rules, the non-fencing of disused shafts, and other wrong-doings, which I found in some instances agreeing with facts. I have in all cases carefully and minutely made examination and inquiry, and, when necessary, obtained satisfactory redress and remedy. In several instances, however, I have found upon strict investigation that the complaints emanated from some petty quarrel between the complainants and those in authority over them, and had no foundation whatever.

For certain flagrant violations of general and special rules I received your authority to institute proceedings against the parties by whom they were committed, and in most instances the penalty of a fine was imposed by the magistrates. One important motive in obtaining these convictions is the desire that the example may be beneficial to others by showing how important is the necessity for strictly carrying out the rules as required by the Act of Parliament, and I am strongly of opinion that the convictions obtained are in this way of much value, in addition to the fact, of course, that they properly punish the offending parties themselves.

With respect to the subject of education, I have not during the year met with any instances of infringement of the statute. The necessary certificates were forthcoming when required for boys under 12 and above 10 years old, and I did not find that any were employed in the mines under this latter age. Still I am not of opinion that there is any perceptible improvement in knowledge generally, and a large amount of ignorance prevails, both amongst men and boys.

I cannot conclude my Report without again urgently calling upon all concerned, owners and masters and men, to combine together for the purpose of reducing as far as possible the yearly list of killed. The strictest discipline is indeed a *sine quâ non*, a groundwork without which all attempts to ensure safety are useless, and this discipline depends quite as much upon one class as upon the other, upon masters as well as men. It is very false economy for a master or an owner to allow his workman to risk his life when by some trifling outlay he can ensure the safety of that workman through any additional means of precaution; and it is equally false economy on the part of a workman to risk his own life when perhaps a little extra time, in setting timber for instance, would materially lessen the danger of his necessarily hazardous occupation. Of course I am now alluding to the many accidents which it might be possible to prevent; many, very many, happen, and always must happen, which are and will be accidents pure and simple, and which no amount of discipline or precaution can obviate. Amongst many other measures calculated to prevent a certain class of accidents, those in and about shafts, I am strongly of opinion that the adoption of self-acting safety gates, which ascend and descend with the cage, shutting the shaft off, is most expedient and much to be recommended. I advert to this here as well as in my last Report because I am fully convinced that they ought to be generally in use, and because I know they have been the means in many instances of preventing persons from falling down shafts.

It is essential that each colliery should maintain a proper and accurate working plan, and it is especially to be advocated that the manager, who is responsible for the efficient ventilation and general working of the colliery and for the lives of the men, should thoroughly understand such plan; and further it is necessary that this same manager should be a man who will never forget that he has the power of doing infinite good or infinite harm by his example. It can hardly be matter of surprise if men should argue from the fact of rules being broken by those in authority over them that they can do the same with impunity. The rules are stringent, and necessarily so, and I firmly believe

that until all parties concerned are equally stringent in the observance of them the list of mortality in mines will not be materially diminished. If an additional amount of that supervision which is so necessary be adopted by owners and managers, it will entail a proportionate amount of attention and carefulness on the part of the colliers and do much to protect their lives by enabling them to foresee and provide against dangers. The general and special rules ought to raise the standard of management if scrupulously adhered to; negligently and carelessly disregarded they are indeed worse than useless.

It is with much gratification that I am able to report to you that there has not been a single accident from the explosion of a boiler during the past year in my district.

I have, &c.

(Signed) FRANK N. WARDELL,
Inspector of Mines.

To the Right Hon. H. A. Bruce, M.P.,
Her Majesty's Principal Secretary of State.

List of the FATAL COLLERY ACCIDENTS, and Loss of LIFE arising therefrom, in the YORKSHIRE DISTRICT, during the Year ending 31st December 1869. -

Date.	No. of Accidents.	Name of the Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.				No. of Lives lost in Coal Mines.
								Explosions.	Blows of Coal and Roof.	In Sheds.	Miscellaneous.	
1869.												
Jan. 1	1	Waterloo Main	Leeds	-	J. T. Leather	-	-	B. Liveredge	-	Assistant hanger-on.	13	Kicked by a pony
" 5	2	Woodthorpe	Sheffield	-	J. Rhodes	-	-	Joseph Bell	-	Fall of roof	-	-
" 13	3	West Riding and Silksone.	Leeds	-	Pope and Pearson	-	-	Samuel Edwards	-	Fall of coal	-	-
" 15	4	Old Mill	Barnsley	-	W. Day	-	-	Robert Lodge	-	Ditto	32	Ditto
" 18	5	Wombwell Main	Ditto	-	Wombwell Main Coal Co.	-	-	George Harrison	-	Ditto	34	Ditto
" 20	6	Brightside	Rotherham	-	Pitsmoor Coal Co.	-	-	John Greaves	-	Through the breaking of a chain, crushed by a tub at bottom of an incline.	18	Incline-boy
										Total for January	-	-
Feb. 4	7	Manston	Leeds	-	Manston Coal Co.	-	-	Thomas Barber	-	Run over by a tub	4	-
" 19	8	New Haigh Moor	Wakefield	-	R. Hudson and Co.	-	-	John Oakland	-	Fall of roof	2	-
										Total for February	-	-
Mar. 8	9	Silkstone Main	Barnsley	-	G. A. Haworth	-	-	Fred. Brown	-	Crushed by a boiler which he was assisting to lower.	24	-
" 11	10	Neville Hill	Leeds	-	Norwegian & Titanic Iron Co.	-	-	Edward Naylor	-	Fall of roof	36	-
" 20	11	Manton	Ditto	-	Manton Coal Co.	-	-	Geo. Nicholson	-	Ditto	33	-
" 31	12	Carbrook	Sheffield	-	Jeffcock and Dunn	-	-	Geo. Godby	-	Fell whilst hurrying, and crushed by the tub	21	-
										Total for March	-	-
Apr. 2	13	Woolley	Barnsley	-	Woolley Coal Co.	-	-	Jacob Ball	-	Fall of coal	25	-
" 16	14	Brightside	Rotherham	-	Pitsmoor Coal Co.	-	-	Charles Ridge	-	Fall of roof	22	-
										Total for April	-	-

MR. WARDELL'S REPORT.

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List of Fatal Colliery Accidents—continued.

Date.	Name of the Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	No. of Lives lost in Coal Mines.					
								Explosion.	Falls of Coal and Roof.	In Shafts.	Misfortune.	Abuse of Power.	Total.
1869.													
May 11	15 Oaks	Barnsley	Firth, Barber, and Co.	Jos. Bowers	Trapper	12	Caught his hand in a pulley wheel, and died from lockjaw.					1	1
" 19	16 Old Silkstone	Ditto	R. C. Clarke	Arthur Stones	Ditto	12	Run over by a tub					1	1
" 26	17 West Airdley	Leeds	West Yorkshire Iron and Coal Co.	Jos. Areyard	Labourer	40	Crushed by a wagon					1	1
" 29	18 Oaks	Barnsley	Firth, Barber, and Co.	Thomas Sutcliffe	Sinker	35	Struck by something which fell down the shaft.					1	1
" 19	North Gawber	Ditto	Thorpe's Executors	John Ledger	Collier	42	Fall of roof					1	1
												1	1
							Total for May					2	6
June 10	20 Wombwell Main	Barnsley	Wombwell Main Coal Co.	James Brown	Sinker	21	Fall of coal in a drift turned out of shaft					1	1
" 14	21 Sifkstone Fall	Ditto	Sifkstone Fall Coal Co.	J. Marshall	Collier	22	Fall of coal					1	1
" 15	22 Darfield Main	Ditto	Darfield Main Coal Co.	{ Chas. Needham	Ditto	22	Ditto					2	2
" 21	23 Sharlston	Normanton	Sharlston Coal Co.	{ Ed. Dyson	Trammer	28	Fall of roof					1	1
" 27	24 Wheldale	Castleford	Wheldale Coal Co.	Alfred Ellis	Bye-workman	28	Fell out of "skip" while descending a "sinking pit."					1	1
				John Bailey	Sinker	20						5	6
							Total for June					1	6
July 8	25 Alerton Bywater	Castleford	T. M. Carter and Co.	Geo. West	Labourer	27	Run over by a wagon					1	1
" 12	26 Dennison Land	Bradford	Bowling Iron Co.	Jas. Cantrell	Collier	16	Fall of roof					1	1
" 21	27 East Gawber Hall	Barnsley	R. Craik and Co.	{ Thos. Halfpenny	Ditto	25	Ditto					2	2
" 23	28 Box Ings	Huddersfield	S. Senior and Sons	{ Alfred Hanson	Hurrier	19	Ditto					1	1
" 24	29 Hagg	Bradford	Hird, Dawson, and Hardy	Charles Knowles	Collier	31	Ditto					1	1
" 26	30 Woolley	Barnsley	Woolley Coal Co.	Godfrey Jackson	Ditto	40	Ditto					1	1
" 28	31 Milmthorpe	Wakefield	J. and J. Charlesworth	Richard Bristoe	Hurrier	35	Struck by piece of coal falling down shaft					1	1
" 30	32 Haesley	Batley	Lodge, Webster, and Scott	B. Hepworth	Hanger-on	21	Fell down shaft off a scaffold					1	1
				Mark Lumb	Sinker	34						6	9
							Total for July					2	9

List of Fatal Colliery Accidents—continued.

Date.	Name of the Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.		No. of Lives lost in Coal Mines.		
							Explosions.	Pulls or Coal and Roof.	In Shafes.	Miscellaneous.	Above Ground.
1869.											
Aug. 7	33 Darton	Barnsley	G. Watkinson and Sons	Geo. Eversedge	Collier	24	Fall of coal				1
" 19	34 Beeston Manor	Leeds	Harding and Co.	Alfred Fletcher	Ditto	19	Fall of roof				1
" 23	35 Denholme	Bingley	Townend Bros.	Thos. Tidwell	Under-viewer	57	Explosion of gas when he was visiting a place with a candle first thing in the morning.				1
" 25	36 Snydale	Pontefract	Rhodes and Dalby	{ John Barratt	Collier	35	Suffocated by powder smoke after firing a shot, the "brattice" not being properly up to the specified distance from the "face."				2
" 31	37 Woolley	Barnsley	Woolley Coal Co.	{ Henry Noble	Ditto	29	Fall of roof				1
				Jos. Whitaker	Ditto	98					1
							Total for August				6
Sept. 11	38 Car House	Rotherham	Rhodes and Harvey	Frank Mitchell	Driver	13	Fall of coal				1
" 39	Old Mill	Barnsley	W. Day	Geo. Holloway	Ditto	13	Fall of roof in engine plane				1
" 40	Tinsley	Rotherham	B. Huntsman	{ Geo. Morton	Collier	59	Coal took fire from some unknown cause, and they were suffocated ; shafts obliged to be sealed.				3
" 15				{ Geo. Allen	Ditto	28					1
" 17	41 Blacker Main	Barnsley	Blacker Main Coal Co.	{ S. Hollingsworth	Labourer	96	Fall of coal				1
" 28	42 West Ridings and Silkstone.	Leeds	Pope and Pearson	{ Henry Horne	Collier	81	Crushed by tubs				1
				{ Wm. Edwards	Driver	14					1
							Total for September				7
Oct. 7	43 Denaby Main	Rotherham	Denaby Main Coal Co.	Wm. Eckersley	Collier	38	Fall of roof				1
" 13	44 Ditto	Ditto	Do.	Jonn Waldren	Swichkeeper	13	Crushed by tubs				1
" 16	45 Swaithe Main	Barnsley	Mitchell and Co.	Geo. Beckett	Packer	35	Fall of roof				1
" 18	46 Kiveton Park	Sheffield	Kiveton Park Coal Co.	Thos. Spencer	Collier	28	Fall of coal				1
" 16	47 Simon Wood	Barnsley	Earl Fitzwilliam	Jas. Taylor	Ditto	25	Ditto				1
" 25	48 Holmes	Rotherham	Rotherham, Marsbrough, and Holmes Coal Co.	Jos. Goodwin	Hurrier	41	Crushed by tube				1
	49 Warrncliffe Sk. stone.	Barnsley	W. S. Coal Co.	Sam. Hirst	Packer	39	Fall of roof				1

List of Fatal Colliery Accidents—continued.

Date.	Name of the Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.				Total	No. of Lives lost in Coal Mines.
							Explosions.	In Blasts.	In Holes of Coal and Roof.	Miscellaneous.		
Oct. 26	50 Strangeways	Bradford	Hird, Dawson, and Hardy	Dan. Kellet	Collier	34	Fall of roof	-	-	-	1	1
" 28	51 Thorncleffe	Sheffield	Newton, Chambers, and Co.	Richard Porter	Bye-workman	46	Ditto	-	-	-	1	1
" 30	52 Nurney	Ditto	B. Huntman	Jas. Broadhurst	Hanger-on	48	Got on to cage top to repair signal wire, when the cage ascended and crushed him.	-	-	-	1	1
							Total for October	-	-	-	7	10
Nov. 4	53 Denaby Main	Rotherham	John Ainborough	Screenman	19	Crushed by wagons	-	-	-	-	1	1
" 8	54 New Gawber Hall	Barnsley	C. Howorth	Collier	42	Fall of coal	-	-	-	-	1	1
" 19	55 Darfield Main	Ditto	Thomas Hayes	Ditto	32	Ditto	-	-	-	-	1	1
" 20	56 Churwell	Leeds	John Johnson	Ditto	31	Ditto	-	-	-	-	1	1
" 25	57 Milnethorpe	Wakefield	J. and J. Charlesworth	Ditto	40	Whilst stooping over a "jenny" rope when it was moving, he fell and was drawn on to the drum.	-	-	-	-	1	1
" 27	58 Garforth	Leeds	Gascoigne and Co.	Incline-boy	16	George Cust	-	-	-	-	1	1
							Total for November	-	-	-	4	6
Dec. 1.	59 Victoria Stanley	Wakefield	Thomas Smith	Collier	26	Fall of coal	-	-	-	-	1	1
" 14	60 Manvers Main	Rotherham	{ H. Pashley	Sinker	90	Drilling out a "missed shot" in a "sinking pit."	-	-	-	-	2	2
" 17	61 Flockton	Wakefield	{ Thos. Smith	Ditto	-	Fall of roof in pit "porch"	-	-	-	-	2	2
" 28	62 Hall Royd	Barnsley	{ Geo. Garforth	Deputy	59	Fall off screens whilst emptying a cof	-	-	-	-	1	1
			{ Ed. Fletcher	Hanger-on	24	Fall off screens whilst emptying a cof	-	-	-	-	1	1
			{ C. Fretwell	Engine-man	21							
							Total for December	-	-	-	3	6
							Total for the Year	-	1	41	7	69

List of the Fatal Ironstone Mine Accidents, and Loss of Life arising therefrom, in the Yorkshire District during the year 1869.

Date.	No. of Accidents.	Name of Colliery.	Where situate.	Owner's or Agent's Name.	Persons killed.	Occupation.	Age.	Cause of Death, and Remarks.	Number of Lives lost.						
									Explorations	Falls of Roof	In Shafts	Miscellaneous	Above Ground	Total	
1869. Feb. 12	1	Mill	-	Bradford	-	Hird, Dawson, and Hardy	Wm. Bramley	Ironstone-getter.	38	Fall of roof. This accident took place on the 15th October 1868, the mass lingering for four months.	-	1	-	-	1
Nov. 25	2	Tong	-	Ditto	-	Bowling Iron Co.	-	Do.	19	Fall of roof	-	1	-	-	1
						Rd. Stoiles	-			Total for the year	-	2	-	-	2

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